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# ACCOUNT OF A PHOTOGRAPHIC EXPEDITION

TO THE

# SOUTHERN GLACIERS OF KANGCHENJUNGA

IN THE

# SIKKIM HIMALAYA

BY

N. A. TOMBAZI, F. R. G. S.

*WITH ILLUSTRATIONS,*

*MAP AND TABLES OF OBSERVATIONS*

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Printed in British India
at the Maxwell Press, Bombay.

SOLITUDE AMIDST THE ETERNAL SNOWS.

LIBRARY
OF THE
BOMBAY
BRANCH

TO

DOUGLAS W. FRESHFIELD

D. C. L., GOLD MEDALLIST ROYAL GEOGRAPHICAL SOCIETY,

MASTER OF THE MOUNTAINS,

WITHOUT WHOSE PIONEER WORK

A GRATEFUL DISCIPLE

WOULD NEVER HAVE HAD THE IRRESISTIBLE IMPULSE

TO ADVENTURE IN THE SIKKIM-HIMALAYA.

TO ITS FIRST CAUSE, THEN,

THIS BOOK IS IN ALL HUMILITY DEDICATED.

# *INTRODUCTION.*

Of the independent State of Sikkim, situated within the greatest mountain range of the world, it can easily be said, because of its accessibility, that it fulfils the ambitions of all keen travellers, whether they tour for the sake of "scenery" or "climbing".

The Darjeeling visitor will find many delightful "spots" for picnics or excursions into the district; the traveller possessing loftier ambitions will seek an unfrequented valley within the virgin forests; whilst the more adventurous mountaineer will find some remote peak or glacier among the snowy highlands of the Sikkim Himalaya.

Personally, I love the mountains, and those of Sikkim have always attracted me most for their wonderful scenery, which affords such scope for mountain photography. I have no pretensions to the abilities of a mountaineer; but sheer love of mountain adventure, the assault of a peak (whether the result be success or defeat), and the urge to see what none or few have seen before—these have drawn me irresistibly to the little-known Icefields of the upper valleys of Sikkim. There is a fascination in attacking an unconquered crest, be it high or low; yet to the summit of which a route has first to be visualised from afar, then discovered in practice. I believe this fascination is greater than that experienced in following a known and mapped route to the peak of a higher or even a more difficult mountain.

My previous journeys in Sikkim, 1919 & 1920, covered chiefly the Northern part of the country, in which I travelled as far as the Kangra La and, after visiting Chumiomo and the Eastern glaciers of Kangchenjau, (on which I reached a height of 20050 feet) I crossed the Donkya La and pushed southwards following the course of the Lachung river. In the South my tours extended from the Singalella range in the West to the passes of Tibet in the East.

Before giving my account of the last tour, I may mention that early in the year I received a letter from the Royal Geographical Society, from which I gathered that it was considered desirable that somebody should make a serious photographic record of Eastern Nepal from well defined points on the Singalella Range. To achieve this was the main

object I had in mind when starting on the journey. I already possessed most of the survey and photographic instruments required for the purpose and had only to complete my equipment with one or two additional accessories and the available survey information to be ready to define accurately the stations of observation.

My next plan, provided time permitted, was to visit the North Eastern part of Sikkim, about which my knowledge was confined to what I had read in books. In glancing over the maps I imagined a route across the Guicha La and thence, for the sake of "testing a short cut", over the Zemu, otherwise known as "19300 feet" Gap. This Gap is situated on the great Eastern ridge of Kangchenjunga, near Simvu, and has so far, I believe, never been crossed by man.

I am far from being a writer, and all I can claim is to have attempted as faithful a record as has been possible in the few pages time has allowed me. I therefore entreat the readers' indulgence for the incoherence of this account of the vivid impressions which the peaks and glaciers of the Great Kangchenjunga Range have left in my mind—visions which can never be forgotten.

---

MY SINCEREST THANKS are due to Mr. Freshfield for permission to include excerpts from his *Round Kangchenjunga* and also for the use I have made of his map; to Captain Meade of the Survey of India Office, Calcutta, for much valuable topographical material; to Mr. Hider of Messrs. Clifton, Bombay, for personal attention in the reproduction of photographic work; to Mr. Sain of Darjeeling for developing the negatives; and to Mr. Evelyn Wood for assistance with the proofs.

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MAP (*in pocket*)

Southern Glaciers of Kangchenjunga and Sikkim-Nepal frontier at end.

"Οὐκ ἐᾷ μοι καθεύδειν
τὰ τοῦ Μιλτιάδου τρόπαια"
Θεμιστοκλῆς

*THE JOURNEY TO DARJEELING*

AFTER a somewhat trying railway journey from Bombay I reached Calcutta during one of the hottest months of the year. An equally unattractive trip across the swampy plains of Bengal, planted with jute and rice and here and there tufts of giant bamboos, brought me to Siliguri, at the foot of the Hills.

The weather was dull and oppressive and the higher mountains were partly hidden behind a morning haze. Having completed the sorting and counting of the moderate number of twenty nine packages—none missing so far—I took my seat in the small compartment of the toy railway, accompanied by my faithful Airedale Terrier "Ronnie".

There was a sudden and complete change in scenery and flora as the train entered the deep forest of the foothills. Hardly a square yard was to be seen denuded of trees or bushes. As we climbed, the tropical jungle of bamboos and palm trees gave place to forests of oak and chestnut.

At every bend of the road a new landscape presented itself—rounded hills covered with dense vegetation appeared, broken here and there by sheer precipices and deep glens in the shadow of which one caught an occasional glimpse of silvery streams and waterfalls.

A halt was made at Kurseong which, next to Darjeeling, is an important hill station, at an altitude of 4800 feet. Here the air grew sensibly fresher and, after another steep climb and a series of zigzags along open slopes, I reached Darjeeling, the end of sitting still and the beginning of action.

*DARJEELING AND FINAL PREPARATIONS*

DARJEELING is among the most important hill stations in India and is certainly the most popular to those who live on the delta of the Ganges. Built on the summit of a long ridge, at a height of 7150 feet above sea level, it commands a magnificent view of the snowy range of

Kangchenjunga. The villas, surrounded with their gardens, in which grow all manner of European flowers, are perched on the steep hill-side among dark fir trees, forming a jagged sky-line to the picturesque landscape.

One can safely say that few places in the world—at least of the size of Darjeeling—show such a diversity of types in their inhabitants. Here one may see all sorts and conditions of Asiatics from the Lepcha, the primitive inhabitant of Sikkim, with his fine-cut feature and long pigtail swinging down his back, to the sturdy Bhutea with his high cheek bones, oblique eyes and copper complexion. Here are the small, wiry little men of Nepal and a crowd of dandy porters or rickshaw drivers whose broad smiling faces greet the visitor on arrival. One is certain to see a venerable Tibetan Lama spinning his prayer wheel and murmuring his eternal *"Om Mani Padme Hun"*.

On my arrival in Darjeeling the mountains were still shrouded in a dense mist which turned into a downpour before I had time to reach the hotel. My first task was to interview the Sirdar. And here was the first hitch. It was Sirdar Gyaljen, a man who had done good work in connection with the Everest Expeditions, who had made all the excellent arrangements, and I have nothing but praise for him. It was a great disappointment to learn that indisposition prevented him from accompanying me; but he had recommended as a substitute Sirdar Nursang to whom also much credit must be given for the actual practical work.

These and the coolies are all hillmen and their efficiency was not surprising; but I must mention in passing a plainsman, whom I took as far as the base camp in charge of my dog. This very energetic and willing young boy quite disproved the rule that a plainsman is useless and helpless in the mountains.

It continued to rain throughout the night and on the following morning it seemed, if anything, worse. I had little time to spare and, as to commence my journey westward would, most probably, have meant crossing the Singalella Range in very unfavourable weather for photographic purposes, I decided to reverse the order of my plans and to start first on the Northern journey, leaving the Singalella for the return.

I spent the whole day in making my final arrangements for the trip the departure of which was fixed for the following morning. There was little packing to be done in the way of provisions as I had brought these

The author.

The party.

up with me from the Army & Navy Stores, ready packed in light cases each containing a complete assortment of all that was necessary for a fixed number of days. Tents, snow-boots and clothing for myself and for the coolies, ropes and ice axes were also apportioned in loads. No load exceeded 45 lbs., the average being well below 40.

My party consisted of Nursang, a hard working and able man, who had served with 5 of the other coolies during the Everest Expeditions, 3 special coolies to whom I entrusted my photographic and survey instruments, and 22 coolies of whom 14 were to carry tents, clothing and other equipment, and another 8 for the coolies' rice and provisions ; 26 in all including the Sirdar. At first sight this figure may seem enormous ; but I had to reckon that beyond Yoksun, the fourth march out of Darjeeling, nothing can be had on the way to replenish provisions, and also that the duration of the tour beyond the limit of trees, where fuel must be carried, was still indefinite.

*ACROSS THE FOOTHILLS TO THE DIVINE ALTAR OF BUDDHA*

WE set out from Darjeeling at 8-30 on the morning of the 3rd. of April 1925. Torrents of rain had fallen during the night and, though the day broke more promisingly than I had expected, it turned again into drizzle. Heavy clouds were passing over the hills completely veiling the distant view.

The first march was 20 miles to Chakung, a fairly long distance, but an easy walk on a good road. I had travelled over this part of Sikkim before and, knowing how attractive bazars are to coolies, I sent Nursang ahead with the men who carried the heavier baggage, thus hoping to avoid late arrivals at destination. I followed an hour later with the camera porters whom I had instructed to be always within call.

The beginning of the journey was over a broad cart road descending gradually along the Western slope of the long ridge on which Darjeeling is built. About 4 miles North we struck to the left whence started a steep descent of some 5000 feet through interminable tea plantations.

A short halt was made about half-way down by the Takvar Tea Estate where, notwithstanding the complete absence of sun, I already began to feel an appreciable difference in temperature. The descent continued for another hour on a muddy foot-path, broken occasionally by slippery short-cuts through the tangled undergrowth of tea plantations. I was thoroughly drenched by the time we reached Singla bazar at noon.

My premonition was fulfilled, for I found the rest of the party gathered under the shed of an old *buniya's* shop gaily enjoying a cup of tea. It was very hot—90° F. in the shade, or 30° higher than it had been in Darjeeling a few hours ago—and, to make things worse, the sun peered faintly through the steamy atmosphere.

The whole party was soon on the way again. We first descended to the bed of the Little Rangit—a wide stream flowing in a North Easterly direction where it meets the waters of the Rangit coming from the North; thence across dunes till we reached the Ramman. Both these rivers contained less water than normally and we managed to cross them on foot, thus avoiding a detour to the bridges which are about half-a-mile East.

From here we made an ascent of about 3500 feet, for the most part by steep short-cuts which the coolies took with the greatest ease. The Sikkim coolie always prefers a short-cut, whether going up or coming down, and it is surprising to see the amount of strain they can stand in their way of tackling the maximum slope, irrespective of temperature or road-conditions.

The vegetation I noticed on this part of the journey consisted chiefly of bamboos, sal trees, *gordonia* and other semi-tropical plants. There were by now but few tea plantations scattered on the slopes of the mountain. After a climb of about two hours, the path became more level and a pleasant walk through a wooded slope brought me to the Chakung dak bungalow. Though we had had no rain during the later part of the afternoon, the sky was still threatening and the air was cooler.

The following morning, hoping to have a good view of the snows, I was up at daybreak, but was soon disappointed in finding that only the near hills were visible, whilst far to the North a curtain of mist concealed the higher peaks. I took advantage of this opportunity to study the outline of the closer mountains from the top of a knoll where the plane table was set up for the first time on this journey.

As far as the eye could see the hills stretched range after range in all the shapes and all the depths of green nature can create, and in the shadows of the deep valley below the foaming waters of the Rangit could be glimpsed through the foliage of overhanging trees—a typical landscape of the lower valleys of Sikkim, yet so vivid as to impress even one who has seen it many times before.

Our next march was a delightful one through forests of a great variety of semi-tropical and temperate vegetation, and included the crossing of two main streams, the Ratho Chu and Rishi Chu, which, flowing in an easterly direction, are tributaries of the Rangit. It will perhaps describe this part of the journey more vividly to say that we commenced with a descent of 1700 feet followed by an ascent of 2000, then down 1330 to end at the bungalow of Rinchinpong after another climb of 1425 feet; all these "ups" and "downs" being within the comparatively short distance of 11 miles. The reader can easily imagine the changes that take place in the flora when all these zones pass in succession before the traveller's eyes.

Among other flowers of the forest, orchids, forget-me-nots and climbing vines attracted me particularly. Of the orchids I collected seven species, all of which were in flower; the beautiful white *Cœlogyne cristata* was perhaps the most conspicuous and then two kinds of delicate *Dendrobiums*, a purple and a yellow. As I was nearing Rinchinpong, in the depths of a silent forest I came across a great trunk of a fallen tree covered with moss from which grew masses of white orchids; it occurred to me that Nature had perhaps planted them there to adorn the grave of some fallen giant of the forests.

I soon discovered that it was getting late and, by hurrying, I reached the bungalow just in time to see the summit of Kabru glistening in the last gleams of daylight. The clouds had lifted and at last I had caught a glimpse of the snows tinged with all the magnificence of one of those glorious sunsets on the mountains of Sikkim.

The small village of Rinchinpong is situated on the North shoulder of a spur which runs from West to East, at about 6000 feet above sea level. The bungalow is higher up near the crest of the ridge, a few minutes walk through a forest, and is surrounded by a small garden in which grow roses and other flowers.

The following day broke fine, and the Sirdar, who usually called for orders at 5-30 in the morning, found me in a comfortable armchair on the open verandah of the bungalow, busy studying the distant snowy heights through my field glasses.

My plans for the day were to make an early start and thus avoid the heat in the deep valley of the Kalet Chu* which flows parallel to the ridge on which Pamionchi is perched. I could see quite distinctly the Pamionchi *gumpa* † and the bungalow on the summit of the opposite hill; they seemed quite near, yet we were separated by a plunge of 3690 feet and a steep rise of 4610.

Having crossed the forest and village of Rinchinpong, we commenced to descend through fields of Indian corn, then over terraces of cultivated land; *Eleusine coracana*, a kind of millet, was growing in profusion, also hill-rice and the winter crop of potatoes, which, at the time, were hardly as big as a walnut but good enough to replenish our stock of fresh vegetables. The grain of the millet is used by the inhabitants of Sikkim to make their native wine which is called *murwa*. The preparation is a simple one; the seed is moistened and allowed to ferment for few days, it is then placed in a bamboo jug in which boiling water is poured. The drink, which is a refreshing one, but inclined to be slightly intoxicating, is sucked through a reed of thin bamboo which is dipped into the fluid through a hole in the upper part of the jug.

We passed some typical Lepcha dwellings, huts perched on platforms, with small balconies of rickety planks. On one of these an infant had crawled to watch the party go by, and sat like a brown owl on the edge of the balcony; but without the owlish characteristic of solemnity. In fact when we approached, it proved the power of mountain-bred lungs in mighty bellowings for its mother, who came to the rescue.

The descent continued down the steep mountain side by occasional short-cuts, meeting the bridle-road further down, until the roar of water announced that we were approaching the river.

The valley of the Kalet Chu is among the most fertile in Sikkim, with many hamlets and small farms scattered on the slopes of spurs which project from the surrounding mountains. We crossed the stream over a suspension-bridge and ascended the mountain on the other side. Though

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* *As noted in the Indian Survey map, but pronounced by the local inhabitants as* "Kulhait".

† *Native name for Monastery.*

The *mendong* at Geysing.

Pamionchi *gumpa*.

it was only nine o'clock when we were a good way up, the heat was intense, and a mishap to one of my coolies, whose nose bled profusely, delayed us. My scanty medical knowledge proved only of temporary use and I eventually decided to leave the invalid in charge of another coolie, whilst a sturdy Bhutea, who boasted of being able to lift as much as a hundred pounds, volunteered to carry the extra load of forty pounds, besides his own of the same weight.

Further up, on an open slope of the mountain, we came to the village of Geysing, which has a small market place and, according to the official maps of Sikkim, a "Post Office"; my own note book reads "a rusty letter box, supposed to be cleared once a week by a runner". I believe a letter I posted here to a friend in Darjeeling has not yet reached its destination, but anyway, this is the last post office before striking out "into the blue" and the delay may therefore be excused.

Geysing is famous in Sikkim for its great *mendong*, a wall of some two hundred yards in length built of layers of stone, very like the uncemented field-walls of Derbyshire. In the *mendong*, however, there are flat tablets inserted vertically at intervals, held between two projecting horizontal elements of the wall. That of Geysing has about seven hundred such vertical pieces, all inscribed with various prayers (mostly the everlasting "*Om Mani Padme Hun*") and with religious symbols of Buddha in his many incarnations.

At each end of the wall is a large *charten*, and many smaller ones at irregular intervals along the *mendong*. I must again digress to describe the *charten* which, although it is universally recognised as the symbol of Buddhism, much as the village crucifix is that of Catholicism in Latin countries; yet its actual derivation is in dispute. One explanation of its origin is to be found in Nature-symbolism. Reference to the illustration will show the square plinth typifying Earth; the hemisphere, Water; the pillar, Fire; and the signs at the head, the starry elements of the Air. Close by the *charten* are usually seen prayer flags fluttering in the wind, which is said to convey the inscribed prayers of the faithful to their gods.

From Geysing we climbed gradually up the bridle-road through lovely woods of oak, chestnut and magnolia, and by green forest-clearings to Pamionchi. The temperate character of this vegetation was noticeably distinct from that encountered before Geysing.

The Pamionchi bungalow has perhaps the best situation of any in Sikkim. It is on the summit of a spur, at about the same height as Darjeeling, and commands a magnificent view of the snows. Close by is the *gumpa* for which the place is held sacred; but stern necessities of reapportioning the coolies' loads occupied the short time too fully to allow me a visit, which I promised myself for the return journey.

I could not, however, resist the impulse to take advantage of the bungalow's splendid position, from an observer's point of view. Looking Northwards up the valley of the Rathong Chu, a deep cleft broken and twisted by the mountain spurs, the snowy mass of Kabru looms in the distance, flanked by Little Kabru on the left and Pandim on the right. Mighty Kangchenjunga is partly hidden by the nearer hills.

*BY A WINDING TRACK TO THE LAND OF THE THREE CHIEFS*

The bridle-road ends abruptly at Pamionchi, and the way to Yoksun, for which we set out at dawn, was the first of really uncivilised, not to say rough conditions. There was still, however, a track of sorts, though its convolutions led us apparently aimlessly through all points of the compass, up and down steep hillsides aggregating climbs of 3810 feet, descents of 5050, in three stages totalling about 9000 feet.

The country we were now entering has no more bungalows; that of Pamionchi being the last; and for the rest of the journey we had to depend on our tents or shelters offered by Nature.

At first we moved downhill through a dense forest of oak, maple, magnolia and laurel, which took half-an-hour to traverse. We then continued down a long slope of arable land, sown with millet and Indian corn, among which wild plantains flourished. The cultivators were the villagers of Chongpong, which we soon passed, observing its small *gumpa*, raised on a knoll. From here the way led from farm to farm untill the fields ended and the path dipped sharply to the edge of the Ringbi Chu. We crossed the torrent by a narrow bridge which spans a gorge where the silvery water boils over huge eroded boulders in its confined space. The unbearable heat of the valley was tempered by the cool breath of the river, fretting and leaping at its bonds.

Over the bridge, a rough track climbs by zig-zags over a steep mountain covered with dense fern, acacia, gigantic grasses and plantain. At the end of this we came to an open slope of barley fields scattered with Lepcha huts, which terminated at the village of Tadong.

From this place the track was level and skirted a shoulder of the hill forming the valley of the Risu Chu, a tributary of the Ringbi. There was no bridge over the former; so we crossed on foot by a causeway of natural stepping-stones. Another climb confronted us up a steep, bare hillside which was being cleared by fire while we were passing.

We thus reached the spine of a narrow ridge where we came across another *mendong* and *chartens*. To our left, a little higher up on the hill, stood the *gumpa* of Katsuperri overlooking the village of Tingling. From here we had a clear view of Yoksun on a grassy plateau across the valley of the Rathong Chu, two thousand feet below it. The heat had been intense all day and I was thankful to halt for lunch under the shade of a huge chestnut tree. I was busy examining the aneroids and thermometers when threatening clouds came up from the Rathong valley. Soon the first drops of rain began to fall, and by the time we were about half way down towards the river, we were in the midst of a deluge such as I have rarely experienced in the Himalaya.

We made all haste to reach the Rathong Chu which we crossed by a bridge similar to that over the Ringbi Chu; but bigger, for there was no convenient gorge to be spanned. Then came the final climb to Yoksun. We started from the bridge up a very steep zig-zag track over bare rocky surface till the slope lessened and cultivated fields appeared. This part was sparsely dotted with semi-tropical trees, bamboo, *berberis* and walnut; and here also were several farms and huts inhabited by Lepchas. The last mile was easy walking across the lush meadows of the Yoksun tableland.

I had sent the Sirdar and the tent coolies ahead from the bridge to fix a suitable camp-site. I found the tents pitched successfuly, although pretty wet, in a sheltered hollow below the house of the *Kazi** of Yoksun. This gentleman had been interviewed by the Sirdar and had announced his intention of calling on me at breakfast the following morning.

According to tradition, Yoksun (which means "three chiefs") was the residence of three influential Lamas who, in the seventeenth century, appointed the first Tibetan sovereign to rule this part of Sikkim.

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* *Title conferred on officers of state in Sikkim*

*THROUGH VIRGIN FORESTS TO THE HIGH PASTURES OF JONGRI*

It continued pouring most of the night, but by daybreak the sky had cleared and I was in a better mood to receive the local landowner. He came, accompanied by his wife and a retinue of various sons of toil, bearing the usual gifts of flowers, vegetables and fruit, eggs and chickens and, last but not least, several bamboo jugs of hot, pungent *merwa*.

While the customary compliments were being exchanged between myself and the *Kazi*, the Sirdar was busy supervising the drying and the rather tedious packing of the outfit at the break-up of the first camp.

We set off at eight o'clock towards Tzubuk, at first over cultivated land. This was the last of the fields, and regular habitations ceased at its confines. The *Kazi* kindly showed us the way as far as the end of his estate and, in bidding me au revoir, expressed his wish to see us all back safely on the return journey, when he promised to have a fresh supply of fruit and vegetables ready for us.

From here we followed the right bank of the Rathong and soon struck into scrub, succeeded by a dense, virgin forest of maple, chestnut, birch, oak and jasmine. Here we entered the zone where some of the beautiful rhododendrons flourish, those of the species growing at heights from six to eight thousand feet. I noticed the *Argenteum* with its glorious mass of white flowers and long, deep green, leaves; and the *Arboreum*, so common in the valleys of Sikkim. All kinds of ferns, begonias, orchids and wild hydrangeas sprang from the sides of the track. Dew drops hung scintillating from the tips of foliage which laid brushing fingers on us as we passed. Gigantic creepers swung gracefully in twined curves from the roof of interlaced boughs.

The way was not easy here, where the valley was almost choked with the luxuriance of growing things. The track became so vague as to be almost non-existent and our feet were snared by the tangle of grasses and plants that were intertwined along the floor of the dim woods. Often the track was only discoverable by instinct or some landmark half-remembered by one of the coolies. Sometimes the way led upwards by a natural stairway of rocks, supplemented with a stone here and there inserted by man, where the step was too great; and, even with these aids, we had often to scramble up with a ready hand for rhododendron and tree-roots.

Landslips and fallen trees considerably delayed our march and upset our bearings at many points. I believe the track would have been

The *Kazi* of Yoksun and his wife.

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Forest near Nibi.

easier had we started out at a later date, when either the herdsmen driving their yaks up to Jongri or the salt-traders, working between Nepal and Sikkim, would have cleared the way. With the exception of a friend of mine from Darjeeling, who had pushed through to Jongri at the end of December, we were the first to open the route this year and to contend with the accumulated debris of winter.

The gradient was very great at many points. Often there was a sequence of ascents, which ended in steep zig-zags, and descents plunging us deep into the valley where the thunderous waters of the river could be heard below. From a clearing of the forest, looking southwards, I had a good view of the green plateau of Yoksun with its fields and huts and the *Kazi's* house below which our camp had been. It seemed so near, yet it was a full two hours' march away. The landscape tailed off into the distance with the long spur of Pamionchi on which the *gumpa* was just visible through a morning mist. We crossed several brooks of crystal water, rippling and cascading through the slender stipes and delicate fronds of maidenhair ferns, and by noon we reached Tzubuk which is a tiny clear space of level ground, a crows'-nest masked by dense vegetation.

There was just room for the camp on this grassy shelf, and I pitched my tent in the middle under the twisted branches of a giant oak tree, on a slight rise. Only a faint light from an overcast sky filtered through the tracery of leaves and boughs overhead. The tree-trunk was hollow, and its burnt cavity showed that it must have served as a shelter for some previous traveller. The coolies tents were pitched on the other side of the tree, at a short distance, and soon the glow of the camp fire and its cheery crackle converted desolation into a "home from home". Luncheon was served and proved more than welcome.

The day's march, though fairly toilsome, had been a short one, for I wished to avail myself of the opportunity to study the local flora. I spent the afternoon botanising; and with the help of two coolies, forced a way down to the Rathong for about half-a-mile through a very dense thicket. *Kukri* knives had to be used freely to cut down rhododendron and bamboo stems which grew in every direction.

I returned from below at sunset and found the coolies drinking tea and chatting gaily near their tent. I always found it most interesting to hear their travel-talk and simple philosophy (partly translated to me by the

Sirdar) and I may say that I have nothing but admiration for their unfailing cheerfulness and their simple way of life. Their hardiness is amazing, yet I suppose comfort is an unknown quantity to those who can sleep as soundly on a hard rock as a child in bed, and who can appreciate the convenience of an iron load-carrier as a pillow!

Eventually I retired to my tent and, as the night deepened, I heard the coolies' voices fade gradually to a murmur, then into silence. Far away a cuckoo sounded his fairy notes; and my lamp flickered, reminding me that it was time to sleep.

The next morning was bright, with a fresh breeze blowing down the Rathong valley. Barometrical observations gave the height of the camp as 6700 feet. The conditions of the track ahead being purely conjectural, I was hoping to reach Jongri on the same day, failing which a halt would be necessary at Bakim. Jongri is just over sixteen miles from Tzubuk, and nearly seven thousand feet higher. However, to reckon on so many miles per hour is always impossible in mountain travel, where road-conditions, gradient and altitude are such preponderant and varying factors. Reference to the appendix, at the end of this account, will show how one's speed drops as one gets off the beaten track.

Notwithstanding all my prearrangements in the packing of provisions and distribution of loads, it was not an easy matter to get the coolies early on the move, especially from camping-places. With a heroic effort, however, the Sirdar succeeded in hastening the packing of tents and baggage and by seven o'clock, the column of twenty-seven men was moving snake-wise on its way towards Bakim. "Ronnie" led the way, barking with his always new delight at the prospect of another march. He raced on ahead, up and down the coolie-line, in and out among the men's feet, presumably after quite imaginary birds. I am sure he must have gone twice as far as we in the day; and the burning question of "speed" certainly did not worry him in the least.

It was still too early for the sunbeams to have penetrated the depths of the valley; yet above us, looking upwards, was a delicate arabesque of blue sky glimpsed through the chinks of green leaves. At first the way was more or less a continuation of yesterday's conditions. The passage in my diary ends with the remark "dense forest with short ups and downs; ground thickly carpeted with dead leaves, concealing slippery

*"Ronnie"*

stones". In fact the greatest precautions had to be taken by the coolies who carried my cameras and other scientific instruments; for a skid at such a place would have meant disaster and my deprivation of some essential to the journey.

We came to an enormous outcrop of brilliant biotite gneiss which leant its forty-foot height over the path so that twenty coolies could have sheltered under its slant. A little further on, following the advice of two coolies who apparently knew the way, we took a short-cut to the right by a very steep descent and a climb up a rocky ladder, where again we had to pull ourselves up partly by clinging to rhododendron roots. Within half-an-hour this brought us back on to the main track, having avoided the detour of following a deep ravine which cut into the main valley at an angle. From here onwards, the ground was more level and, after a march of nearly two hours from camp, we reached a place called Nibi, which is a good camping site, much larger than that of Tzubuk, similarly situated in a clearing of the forest. At one end of the open space were the remains of a shelter made of plaited bamboos, no doubt the refuge of a yak herdsman. I halted here for a while to consult my aneroids and found that we had only gained six hundred feet from Tzubuk. And now the walking was somewhat easier, though the track continued its winding course through the dense trees, slightly undulating.

Round a sharp bend a distant murmur of water could be heard, gradually swelling into a mighty roar as we pushed on. An abrupt drop down a narrow and slippery path brought us to the source of the thunders. This was the Praig Chu, whose waters, leaping and bounding among the huge boulders of its bed, pour down in a cataract here.

The Praig Chu starts from the Aluktang Glacier and, flowing almost due South for about ten miles, as the crow flies, meets the Rathong Chu at a point some two hundred yards from the rapids. The latter, rising in the moraine of the Rathong Glacier, runs at first parallel to the Praig, and then turns South-East about three miles before their confluence. Between them they drain the labyrinth of glaciers lying between the great spurs which shoot from Kabru southwards. The Rathong* is swelled on the

* *From enquiries I made on my return, I gathered that the whole stretch of the river from the Rathong Glacier to its confluence with the Ringbi Chu is known as the Rathong Chu; the Praig Chu and all other feeders to it being considered tributary. The Indian Survey map describes that reach of the river from where it swings south-eastwards before receiving the waters of the Praig Chu to their actual meeting as the* "Kokchurang Chu", *which seems to be misleading, as the river, both before the turn and after its union with the Praig, is definitely known as the Rathong Chu; and no enquiries I could make discovered any knowledge of the name* "Kokchurang Chu".

right bank by streams rising on the slopes of the northernmost spurs of the Singalella Range, taking its waters from the Eastern side of that watershed; and on the left bank by the watercourses of the West side of the Jongri spur, which projects southwards from Kabru. The Praig Chu is fed by the innumerable streams down the Eastern side of the Jongri spur; and by those of the Western side of the Pandim-Jubonu Range, with all the runnels from the hanging glaciers around those peaks.

We crossed the Praig by a small and very doubtfully secure bridge of planks which were green with moss and rotten, and then began the steep climb to the Jongri highlands. Leaving the Praig Chu to the right, we climbed by a very steep zig-zag up the side of the mountain overlooking the Rathong Chu. Soon we turned north-easterly up an even steeper path, through a forest of oaks, gigantic magnolias, stunted pines, bamboos (smaller than those we had left in the valley) and two kinds of rhododendrons: *Argenteum* and *Falconeri*, the latter some forty feet high with long shiny leaves. This brought us, through a thousand feet, to Bakim (8310 feet) at noon, where I halted an hour for the coolies to have their meal, as we had a long march ahead. They settled down in batches to finish cooking their rice, which had been half-boiled, to save time before the morning's hasty start. While they were lighting fires and eating I improved the shining hour by observing the near-by vegetation. There were now magnificent *Abies Brunoniana* and silver fir, their branches decorated with bunches of moss and festooned with creepers. Many *Brunoniana* trees must have been a hundred feet high and twenty feet in girth at the foot.

The weather continued fine, but it was gradually becoming overcast and colder. We took to the road again just after one o'clock, up through a close-set forest of bamboos which met above our heads like a long, vaulted corridor in some dim Gothic castle. The regularity was peculiar, but was broken at places by bamboo stems thrown by winter storms athwart the track; and here the *kukris* had to be produced to cut our way through in the half-light.

I sighted some snow-cocks feeding on juniper berries; and was surprised to notice the tameness of these birds. They allowed me to approach within ten yards or so before scuttling away among the trees.

A fairly easy, if rather steep climb of forty minutes brought us up another thousand feet; and here the bamboos had given place to giant firs.

A halt at Bakim.

Rhododendron *Argenteum*.
Yellowish-white flowers, suffused with pink. Deep green leaves.
(One ninth natural size).

We crossed a clearing carpeted with thick grass and strewn with wild strawberries in flower and passed up into the fir-wood beyond, where juniper and many species of rhododendron were growing; but many of the trees were blasted by the cold.

Here the weather changed rather suddenly. Mist or cloud swept up about us and wrapped us round for the rest of the day. A cold North wind sprang up; and this and the damp vapour made the surroundings appear pretty desolate for the time. On to Jongri the way lies along the spine of the ridge and is a sequence of level stretches and short climbs, not so steep as those lower down.

At 11,000 feet we met the first patches of snow, lying in drifts under the shade of trees, where, exposed to the sun, it had thawed to slush. We traversed magnificent forests of rhododendrons; but on reaching 12,500 feet the species degenerated into the alpine varieties, notably *Hodgsoni* and *Nivale*. The latter is one of the hardiest of woody plants.

At six o'clock night overtook us and the cold became intense, with a chilling mist floating round the mountain. I passed several groups of coolies gathering brushwood for the camp-fire, of which need, instinct always warns them when they get near the fuel limit. They had piled wood high on top of their loads, and, in the misty obscurity of the dusk their gnome-like figures appeared most eerie, toiling upwards to fire and rice. We waded in soft snow for what seemed like an eternity and, after a short climb to a pass, at 13,450 feet, we crossed a slight hollow and reached Jongri at 7-15 p.m. Some of the more energetic coolies had already arrived and the stragglers were all in within an hour. The first thing for me was a fire and tea, then shelter; and the coolies, too, always considered shelter quite secondary so long as they had fire and rice.

Jongri has two stone huts, but as these were innocent of doors or windows, and were very tumbledown, I pitched my tent on a knoll above, from where I hoped to have a clear view all round. The coolies made themselves thoroughly at home in the shelters, inside which they lit huge fires and settled down to forget the weariness of the day in steaming cups of tea. We had actually been over twelve hours on the road, with aggregate halts of less than two hours. "Ronnie", still irrepressible, and myself fed together in one of the huts, by a fire, where the Sirdar came to discuss the next day's plans.

We were still enveloped in mist; but presently a light easterly breeze sprang up and the sky showed signs of clearing. It was the night of a full moon, which by ten o'clock was well above the horizon, glimmering like a pale ghost through the haze.

Long after I had retired to my tent, when opening its small window to hang out the thermometers, I was met by one of those unforgettably impressive visions of the mountains. The mist had quite blown clear from the Jongri spur, revealing to the North-East the magnificent peaks of Pandim and Jubonu soaring, so it seemed, in middle heavens, above the clouds which shrouded their lower slopes. Their crests glittered with silvery moonshine like fairy cloud-castles, impalpable butresses with their aerial pinnacles spired to the heavens. Gradually the vapour drifted towards the Guicha La and only Pandim remained wreathed with a halo of mist across the great Southern precipice, above which its massive snowy head was thrown against the dark purple sky. To the West, the undulating highlands of Jongri rolled away, thinly covered with moonlit snow, to the dark outline of the Kang La ridge.

I slipped inside my sleeping-bag, busy with speculations on the possibility of seeing next day the greater snow-capped giants, which had so far been hidden by mist and near hills; and was thus kept awake for some time. The temperature had dropped to 29° F., so that my sleeping-bag proved barely sufficient to keep off the cold, and I felt too chilly to get up and unpack the extra blankets which were reserved for greater heights.

*DAWN ON KABRU*

THE FOLLOWING morning, in accordance with orders given to the Sirdar, I was woken up at 4-15 a.m. I had planned to go on a local excursion with the Sirdar and two camera coolies, and I was delighted to grant a morning's leave to the rest of the party. I was well aware of the climatic conditions of the higher regions of Sikkim, where usually the early mornings are clear, and, about an hour or so after sunrise, clouds come up from the lower valleys, clinging on to the higher peaks for the rest of the day. I therefore hurried as much as possible and by 4-45 a.m. I was out of the tent. The air struck sharp, but it was a perfectly still night, with not a breath of wind. The moon had nearly completed its orbit and was about to dip behind the heights of the Kang La.

Kang La Nagma.

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Sunrise on Kabru.

Kabru ( 24,015 feet ).

Little Kabru, Kabru,
Dome and Forked Peak.

At first we set off in a north-westerly direction, crossing undulating pastures covered with tufts of long, dried grass. Here and there grew low bushes of alpine aromatic rhododendrons, with their curled leaves showing black against the white, scattered patches of snow. An hour later we struck to the North over rough ground strewn with angular granitic rocks. This brought us, in half-an-hour, to a Gap situated on the South-Western flank of Kabur, and, suddenly in the pale light of dawn, with not a speck of cloud or vapour in the sky, a glorious sight unfolded itself before my eyes.

Here was a colossal amphitheatre of giant mountains. In the middle, Kabru dominated the landscape, with the whole of its Southern face visible. Against the dim blue of the dawn-sky its sharp white spine stood out, sweeping up at either end into a crest; and, below, the massive slopes swept down to the depths of the Rathong valley, where the shadows of night still lingered.

To the left of Kabru, from a gradual slope of deep snow, Little Kabru reared its solitary peak. Its Southern face, in which is a great hanging glacier, plunged down into the valley at an angle of fifty degrees. Further to the left the eye followed a long spur of rocky heights with a glacier horizontally along its snowy spine, ending in the buttress-like Kang Peak, overlooking the Kang La, as if it had been placed there by Nature to repulse any attack on the pass.

To the right of Kabru, just in front of its North-Eastern spur, rose the massive Dome with its thick mantle of snow; again to its right, further South, we saw the jagged heights of the Forked Peak with its fluted icy curves of a delicate construction unparalleled by any I have seen elsewhere in the Himalaya. The panorama terminated with ridges of rock, near the Gap of Kabur, of the most fantastic architecture imaginable. And all the time the eyes were drinking in this lovely picture, Nature proved herself a perfect painter as well as draughtsman.

The sky, which was dark at first, slowly faded through the delicate shades of blue, then, high above the peaks, began to shine with pale mauve which grew faintly into a flush of red, glowed brighter with the deeper fires of dawn, and last radiated molten gold from the sparkling summit of Kabru with the swift rays of the rising sun. As the first sunbeams struck Little Kabru, the sky deepened with a pink flush and the whole landscape reflected its fires—the pure snow was dyed orange and pink, and, as the sun breasted the mountains, the deep amber turned to a lake of golden light.

For two long hours I stood gazing at these gigantic citadels of snow and studying their architecture through my field glasses. My ambitions carried me in thought up to the broad summit of Kabru by the Rathong and Kabru glaciers and on to the *néré* above them. This appeared possible, if difficult; and I passed on to the mental conquest of the Dome; but imagination boggled half-way up the great glacier across its Southern face. I had dreamt myself up the Rathong glacier, along its lateral moraine, to where the slanting glacier joins it behind a spur diagonally across the face of the mountain. I had struggled up this glacier as far as the upper ice-fall, where ridge and glacier ended; and here came back to earth with the realisation that no mountain can be considered climbable unless it is actually tested. As for the Forked Peak, with its precipitous wall of some four thousand feet of *roches moutonées* and its icy eaves, unless the would-be climber is prepared to take uncommonly great risks, he will perhaps do better to attack the mountain from any other side than that which I could see from this view-point. In my opinion, even the boldest mountaineer may be obliged to allow this peak to remain among the untrodden giants of the Himalaya.

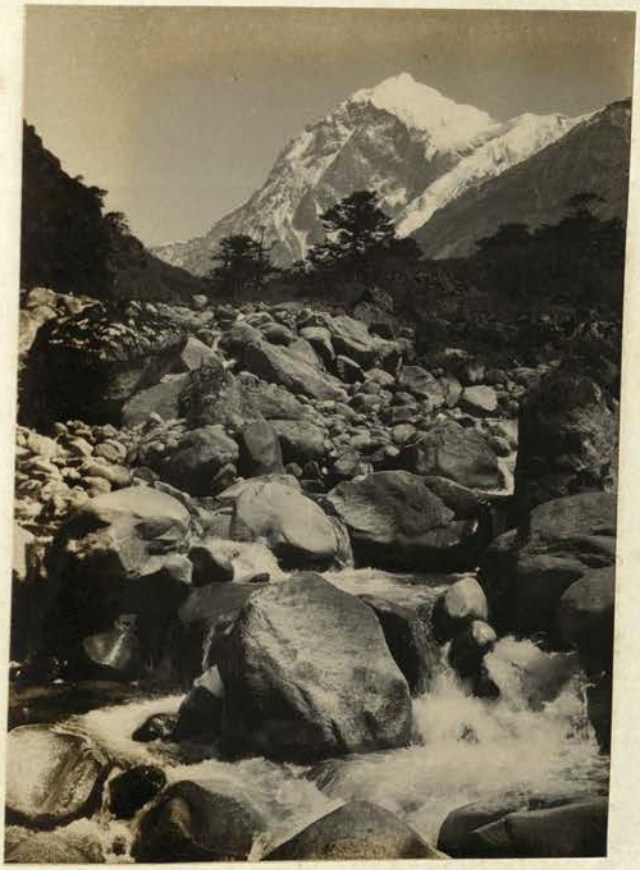
I was in deep thought when, turning South, I saw clouds coming up the Rathong valley with great velocity; but I had won the race, for my photographic work was over. Within ten minutes, armies of clouds had reached the higher level of the Rathong glacier, and were sweeping up towards the peaks. Meantime, another cloud attacked the Gap of Kabur, and, before I had time to pack my cameras and instruments, we were surrounded by a dense, cold mist. We retraced our steps, and after a long hour's walk through a white blinding opacity, we reached the huts before noon, where a good lunch and hot tea awaited us.

*THE VALE OF ALUKTANG*

DURING my absence in the morning the coolies had had ample time to rest and recover from the fatigues of the previous long march. With new life, therefore, we started at 12-30 p.m. for Aluktang. In the dismal mist, which still hung about the mountains, the beginning of the journey was uninteresting, especially as an anticlimax to the glorious view we had just left.

Little Kabru ( 21,970 feet )

Forked Peak ( 21,140 feet )



Looking North,
from the bridge over the Praig Chu.

Pandim
and the upper course
of the Praig Chu.

We followed a north-easterly direction across the undulating table-land of Jongri, which, at this time of the year, has but little grass. The mountains being concealed by clouds, I paid more attention to the flora; but this, too, was poorly represented with dwarf rhododendrons; and the only alpine flowers I noticed were gentians.

Here the Jongri plateau ended suddenly in a plunge of 1550 feet to the valley of Aluktang. The descent, though mostly by zig-zags, was fairly abrupt, and, about half-way down, the camera porters were delayed by having to negotiate a steep slope where soft snow lay deep among rhododendron bushes. As we were nearing the valley, the track improved and we entered a forest of fir, juniper and several kinds of rhododendrons. We were then, at least temporarily, back again on the level of trans-alpine vegetation. The sound of water was heard and we soon reached our old acquaintance, the Praig Chu—but on its upper course this time. We first had to cross a tributary stream flowing south-eastwards, then, by a couple of rickety wooden planks, the Praig Chu itself.

As we were crossing the river the weather cleared most unexpectedly. Looking from the bridge up the valley, the eye took in thousands of glistening boulders, hardly covered by the icy water which foamed and raced among them. This sunlit picture filled the foreground, while further up the valley the shadows of hills barred the scene with darkness. In the background, the gleaming heights of Pandim rose above the shadows, out of which the few stunted firs, silhouetted black against the snows, added the last ethereal touch of beauty to the landscape. And this was to be our last view of trees for some time, for we were entering the unwooded levels.

Beyond this place, and for the rest of the forward journey, of an unknown duration as yet, we had to depend on what fuel we could carry and to economise as much as possible for the greater heights. The coolies whole-heartedly endorsed my suggestion to make the last unrestricted blaze a brilliant one. Under the Sirdar's direction the valley-woods resounded to the echo of the *kukris*, working literally at full swing. As I anticipated that the coolies would indulge the imp of destruction to some extent in their delight in attacking the last of the trees, I went on ahead and made use of the delay caused to have a closer view of the head of the valley.

I followed up the left bank of the Praig Chu by a stony track, indeterminate at many places, winding among rhododendron bushes and beds of dried-up rivulets which traversed the slopes of the mountains on the right. The gradient was gentle but steady, and after an hour's walk I came to Thangme—a level, open space where long grass, now withered, indicated a yak grazing station. Here the valley became wider, with a long, steep, rocky spur rising to the West and the slopes of Jubonu to the East. I tried in vain to catch a glimpse of its peaks above, but evidently I was too near the lower flanks of the mountain to allow a view of the upper slopes. Low clouds in the North concealed the head of the valley in the direction of Kangchenjunga which I had not seen so far; but Pandim remained very conspicuous the whole afternoon and towered above me as I approached.

Half-an-hour's walk up a stony track, then across a second trickle, brought me to a broad, level ground on which I decided to fix the camping site for the night. I was a long way ahead of the coolies and, while waiting for the tents to arrive, I took a stroll towards the Praig Chu which ran a few hundred yards to the West. At this place the river was a mere stream trickling along the bottom of its rocky bed, which was several feet below the level of the camping ground. Tiny bushes of aromatic rhododendrons grew on the banks of the river among the rocks. To my delight I discovered two species of alpine flowers, a *Potentilla* and a gentian. It was a long hour till all the baggage arrived, during which time I watched the sunset on Pandim, which was a magnificent sight. Its snowy mantle was tinged a pale red, which deepened as the sun sank behind the mountains to the West.

At last the coolies came up, with a big quantity of wood piled on top of their loads. The tents were pitched and two roaring fires were lit. I had a busy evening making my plans for the rest of the tour, which I reckoned to include also ascents on neighbouring mountains, whence I could survey the district and ascertain, if possible, the prevailing conditions beyond the Guicha La. I took careful barometrical observations, which gave the height of our camp as 13,150 feet, or about 300 feet lower than that of Jongri. My aneroids and all other instruments had worked perfectly so far, and all I could wish was favourable weather to allow good photographic work.

Our camp at Aluktang, though exposed to the unexpected gusts of southerly winds, was well situated and not far from either fuel or water. I therefore decided to make it provisionally a Base camp, and to leave a small

The vale of Aluktang.
Looking South towards the heights of Jongri.

Kangchenjunga, and the valley of Aluktang.

tent, two loads of rice and a case of provisions, in charge of a coolie, the young servant and my dog. I was reluctant to leave "Ronnie"; but after due consideration, I decided that it was necessary to do so in order to avoid possible trouble and delays.

The night was moonlit and cold, with the temperature dropping to freezing point inside my tent. The valley was still; but high up the wind was passing swiftly across the sharp-edged rocks of the Western sky-line, producing a hissing sound which, at intervals, disturbed the silence of the night.

*DAWN ON KANGCHEN-JUNGA AND PANDIM.*

IT WAS a clear and sharp morning, long before sunrise, when I set off to climb to the upper slopes of the valley, in the direction of Tingchingkang, or the northernmost peak of Jubonu. As on the previous day, I left the coolies at the camp and only took the Sirdar and the camera porters with me.

When I was leaving the tent I caught the first glimpse of Kangchenjunga—by moonlight. Pandim dominated the foreground and, being close, shot up to a great apparent height, so that the giant in the distance was hardly recognisable as the third highest peak in the world. It was dwarfed by distance, and I could only see a section of its Eastern ridge peeping from behind the spur to my left.

The ascent of a trackless mountain dimly lit by the moon, was not as easy as I had imagined the previous evening. The memory of two nasty falls remained with me for some days afterwards; but, luckily, the cameras survived the ordeal, thanks to special precautions. As we climbed, Kangchenjunga gradually revealed itself, until its beautiful pyramidal peak appeared in the distance. My scheme to follow the ridge of a spur leading straight to the upper slopes of the valley did not prove satisfactory, and I had to look for a more practicable way along the steep, dried-up bed of a stream. Dawn overtook us while struggling up the last stretch; and when I emerged from behind a side ridge, which temporarily concealed the view, I found myself perched on a rock (14,010 feet), whose few square yards of level ground offered an attractive halting place. I had gained 860 feet in 55 minutes—by no means a record;

but, considering the condition of the ground and the time wasted in the semi-darkness, I was pleased to have reached this spot just as the first rays of the sun touched the summit of Kangchenjunga.

What this sunrise lacked in breadth, as compared with that I had seen on Kabru, it made up in height. Mighty Kangchenjunga reared its majestic head high above its buttresses of rock and snow, dyed red in the dawn-light. The face of its second peak (27,820 feet), by far the most conspicuous from this point of view—was visible for its whole length, in the shape of a pyramid, with one rocky flank dropped almost vertically a couple of thousand feet. At many places it seemed too steep to retain the mantle of eternal snow. The highest crest (28,150 feet), peeped over the left shoulder of Kangchenjunga behind its Southern spur, from which rose the Talung Peak.

The sky-line was formed by the great Eastern spur which sloped down from the 27,820 feet crest, to vanish behind the heights of Pandim. This colossal shoulder of snow was buttressed all along by enormous crags which jutted out from the ridge, casting sharp, black shadows on the dazzling whiteness.

Closer to us than Kangchenjunga, between the Talung and Guicha glaciers, a solitary peak stood up, outlined faintly against the far snows of the giant. At first sight this appeared almost part of Kangchenjunga itself; but a closer examination by binoculars showed me that it formed part of the zig-zag spur which shoots East of Kabru in the direction of the Guicha La. Its Southern face seemed extreemly steep and fluted, rising out of the semi-circular head of the Guicha glacier. Further away, I discovered several traces of recent avalanches across the great snowy slope of Kangchenjunga which dips into the Talung glacier.

I then turned my attention to Pandim, whose snowy head, bravely set on broad shoulders, rose magnificently from their robe of white. From the shoulders, this mantle swept down in gentle curves to the brink of an appalling precipice where the snow forsook the bare rock for a sheer fall of over three thousand dizzy feet. The outflow of the upper *névé*, where the excess snow of the Southern face shoots down the abyss, can be seen at the bottom of the photograph facing this page.

To the South-West, the heights of Jongri and the Kang Peak were silhouetted against the sky-line. The sun was well above the horizon before

**Second crest of Kangchenjunga, 27,820 feet.**
(*Telephoto from Western slopes of Jubonu*).

**Dawn on Pandim**
(22,020 feet).
(*Telephoto from Western slopes of Jubonu*).

The Guicha glacier and heights to the North-West of Guicha La (*from camp IV*).

Kangchenjunga, and Pandim.
Moraine and source of Praig Chu, in foreground.

I finished devouring these mountains through my telescope; and a steep but easy descent, over another route, more to the northward, with several halts on the way to take photographs, brought us back to the camp before eight o'clock.

Having given my final instructions to the coolie and the servant, who were to remain here until further orders, I pushed on in a northerly direction. The parting from my dog had been rather a wrench; and for a good half hour the valley re-echoed with his deep bark—as if he were trying to recall the gradually disappearing caravan.

*TO THE GUICHA LA.*

BEYOND Aluktang the gradual ascent continued and the mountain became more and more bare. A couple of miles away, at the head of the valley, a moraine was visible, with its wedge-shaped heap of greyish debris pointing down towards us. And by now, in sharp contrast to the shadows below, the snows of Kangchenjunga and Pandim raised their heads above, glittering in the morning sun.

About a mile further, we passed a *mendong* which contained a number of inscribed stones, indicating the sanctity of the vale. Aluktang is visited every year by Lamas who come to offer their prayers to the goddess of Kangchenjunga, and no better atmosphere could have been selected for contemplation than the desolate solitude of this great valley. Near the *mendong* were the ruins of a small hut built of layers of stone, with no roof, barely sufficient as a protection against the southern squalls—made, perhaps, to shelter these Lamas on their occasional pilgrimages.

We soon reached the moraine, and were scrambling up its pile of angular stones, when a sudden change took place in the weather. Threatening grey clouds appeared above Jongri, coming up towards Aluktang. Before long they had engulfed the valley, and we enjoyed a repetition of the previous day's chilling mist.

We then followed the raised left edge of this moraine, which a little further on mingled with the debris of a couple of other terminal moraines of two glaciers from high up on Pandim. After half-an-hour of more or less gymnastic balancing on treacherous stones, we reached the shores of a glacial

lake, enclosed between the lateral moraine of the Aluktang glacier on the left and the tongue of a Pandim glacier on the right. Notwithstanding the drizzle, which had now turned into sleet, a short halt was made here to survey the little that could be seen of the surroundings

I estimated this lake to be some 500 yards long and 300 wide. The whole of its surface, except a small portion of its Northern end, was frozen hard and would have been ideal for skating; but I had unluckily left my skates in Bombay. On examination I found the ice to average about three inches thickness, and several big stones flung from a fair height failed to crack it. This was rather a surprising contrast to the banks of the lake, where traces of alpine flowers were still visible, and to the surrounding hills which were almost bare of snow. The Southern shores of this tarn consisted of a morainic sediment of pebbles, which presumably also formed the basin of the lake. Having taken barometrical observations which gave the height as 14,310 feet, I pushed on and skirted the right bank of the lake, until I reached its northernmost point. Here a small stream, trickling down the moraine, emptied its milky water into the lake. From this point, looking South, the scenery reminded me of my 1919 trip to Eastern Sikkim. Except for the higher altitude and for the presence of moraines, this mere could have been taken for the Changu Lake, on the way to the Nathu La.* The similarity was specially marked by the same narrowing Southern outlet and the same ring of contrasting black hills. Curiously enough the dull, dreary weather, under which I had seen the Changu Lake, was identically reproduced this time on the way to the Guicha La.

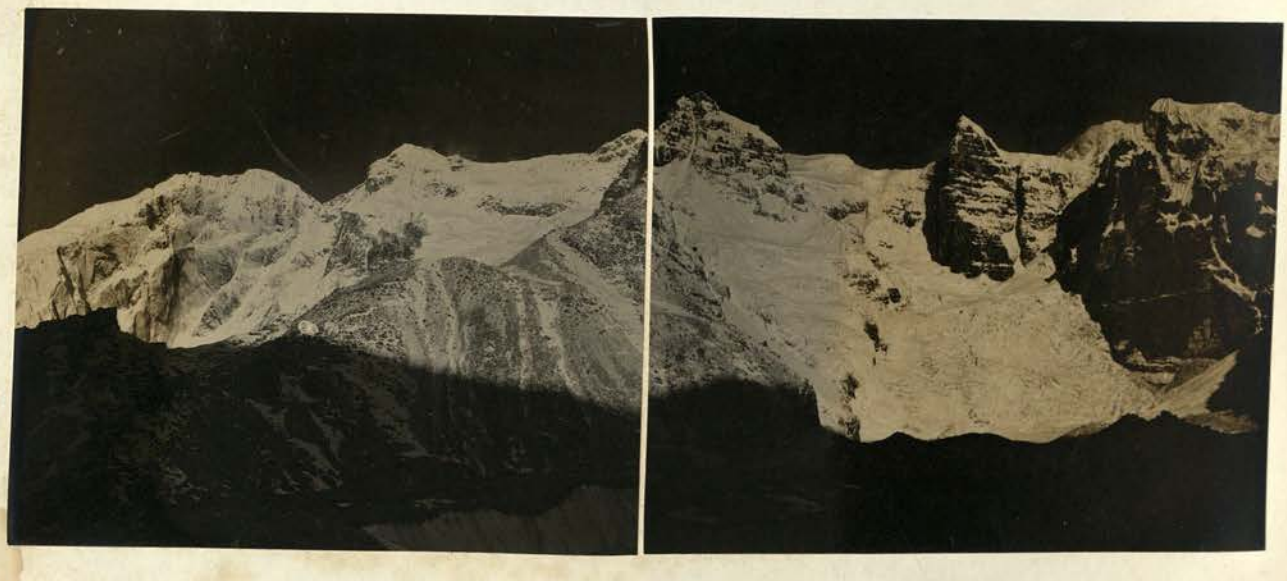
A gradual ascent over a slope sparsely tufted with long, withered grass—the last signs of fodder for yaks—brought us to a second lake, much smaller than the first, and almost dry. After a short climb across a ridge and down to a hollow, we reached a broad open space with an almost level surface of sand and pebbles. This was the basin of another tarn and over its space a rivulet spread out, flowing down into the second lake from the glacier above. The place is called Chemthang, and stands at 15,325 feet.

The Sirdar, thinking in this a suitable camping-ground, was about to give the order to halt; but a couple of conspicuous boulders on the opposite hillside, attracted my attention and I decided to push on. Our tents were pitched at the foot of these rocks which offered a certain amount of protection

* *One of the passes in Eastern Sikkim leading into Tibet.*

Glacial lake below Chemthang.

Guicha glacier and pyramidal Peaks.



Forked Peak and heights to the North-West of Chemthang.
(*from station of observation on Western spur of Pandim*).

against the cold wind. As the tents were being opened, a squall struck us, followed by a heavy snowfall.

It was hardly three o'clock, and I had a long afternoon before me, which I spent in adding a few notes to the diary of the journey; whilst outside, through the small window of my tent, I could see the snowflakes whirling round against the grey sky. I spent the later part of the afternoon with the coolies, drying my boots by their fire. The smoke inside their tent had literally choked the atmosphere so that one's eyes smarted abominably; but they themselves revelled in it and would never do without their blaze.

In the evening, a thick layer of snow covered the mountain-side; and the outer fly of my tent bent under its soft weight. When I disappeared inside my sleeping-bag, on top of which were stacked all the available blankets, the thermometer registered 21° F.

The next morning, when I opened my tent, I was met by an expanse of whiteness. There was not a cloud in the sky and the fresh morning air sparkled like wine. The whole surroundings seemed ethereally clean, as if newly-made; and in that limpid atmosphere, one felt that one could throw a stone easily to the peaks on the horizon. Away to the West, only the snowcaps of the Forked Peak and the beginnings of the spurs could be seen. From this position however, location was most confusing, for the camp was deep in the glacier-bay which includes the Aluktang and Guicha glaciers. I therefore stepped back eastwards some two hundred feet up the slopes of a Western spur of Pandim. This was fairly steep and rocky, thinly snow-covered; and I exercised all the care taught me by the previous day's mishaps. The cameras, instruments and myself were all safe when we reached an excellent vantage-point, whence could be seen the tops of the Southern and Eastern spurs of Kabru, with all their many glaciers and ridges slanting down. From the point of view of local survey this was the very place.

Looking across the glacier-valley westwards I saw above the dark shadows of a long, irregular ridge, the white crests of the Forked Peak. This side of it appeared just as impregnable as its Southern flank (as seen two days before). The Dome was mostly hidden behind the shadowed ridge; but it appeared climbable, if with difficulty, from the Aluktang glacier, the upper slopes of which I could see. Another ascent I imagined was on to the saddle of the Eastern spur of Kabru, by way of a glacier to the North-West and then between two *gendarmes* which threw their heads high up on the sky-line.

The glacier I mention might be described as the Main glacier, since it occupies the centre of the glacier-bay, lying between the Aluktang and Guicha glaciers. It showed no signs of crevasses, and, if the snow is in good condition, I believe it should prove practicable to a roped party. Towards the head of the Main glacier, on the right, an almost perpendicular wall of black rock rose a sheer thousand feet from its visible base. Behind this crag, the tip of the Talung Peak was just visible, dimly white above the black escarpment. This peak (whose height I make to be 23,080 feet on triangulation from camp II on the Guicha La, at four miles distance) is situated on the great West-of-South *arête* of Kangchenjunga, midway between the 27,820 feet crest of that mountain and the North-Eastern peak of Kabru. Unfortunately none of the Kabru summits were visible here, from the slopes of Pandim.

In the North, my attention was held by the beautiful icy pyramid which I had seen from Aluktang; but, from this nearer point of observation, I could clearly see a double-apex bridged by a curving shoulder. To its left, a *col* linked it up with another pyramid—the whole forming the horseshoe-head of the Guicha glacier. The latter was visible for its full length, inclined at about 23° and running South-East towards the Guicha La. Its surface was very hummocky.

To its right, through a dark V-gap, a white section of the Kangchenjunga Eastern Ridge walled-up the distance. Above this barrier floated a cloud of mist, which had, a moment before, shrouded the far view. To the right again of the V-gap, a ridge abruptly terminated the panorama with two huge rocks shooting straight up from the mountain-slope. These marked the heights of the Guicha La.

One more word as to the Glacier-bay, which was crossed and re-crossed not only with spurs of the mountains, but also with the complex moraines of the three ice-streams. Below us, the lateral moraines of the Main Glacier ran parallel, exactly like canal embankments, first East-of-South, then by a curve to the South where the Aluktang glacier joins this one. The surface of both these glaciers looked very rough and dirty. Frozen pools of water lay among the amorphous chaos of the convergent moraines.

Having completed my observations, I signalled down to the coolies to start on their march, and, by the time we reached camp, the heavy baggage was again moving on its way to the Guicha La. A puff of mist drifting up the valley heralded a change in the weather, confirmed by the clouds which

Camp IV (*below the Guicha La*).
Looking South, Jubonu in the distance.

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Looking South, from Camp II on Guicha La. (*Main glacier and morainic lakes, in the foreground.*
*Valley of Aluktang and Praig Chu, in the distance*).

**Camp II on Guicha La.**
**Kangchenjunga in the distance.**

**Guicha glacier** (*from camp II on Guicha La.*).

soon followed in close succession; but it was only vapour this time—without snow. My immediate plans were to reach the Guicha La and to camp on the pass itself, so as to be all ready with cameras and other instruments before the dawn.

The walking was fairly easy as far as the foot of the Guicha ridge, which we reached in half-an-hour. Here, however, we were confronted by a steep slope of about 1000 feet sweeping up to the Pass. To the left, through occasional clearings of mist, I could see the great vertical rocks which inclined their craggy heads to the North-East. From the force with which the clouds were being driven over the pass, I inferred that the wind was very strong on the heights. Because of the difficulty of moving in the mist, and for the sake of saving time, I decided to split the party for the first time on the journey. I therefore took only the Sirdar, the camera porters and two extra coolies for tent, fuel and food for the small party. The extra coolies were instructed to return to the lower camp for the night, where I left all the heavy stuff to follow the next morning, by which time I should have completed my surveying.

The climb was very rough and tiresome at the beginning; at first some five hundred feet up over coarse rubble, and then, about half-way up, we had to negotiate a traverse over a stretch of loose snow, sloping diagonally across the mountain. A further climb of about 350 feet brought us to the Guicha La (16,430 feet), where a heap of stones in a snow-drift marked the Pass.

A sharp, cold wind was blowing the clouds across the mountain; and in this hazy atmosphere I could hardly distinguish objects at thirty yards' distance. After a vain search of twenty minutes to find a suitable tent-ground, I climbed to the North-West on to the sloping summits of the great rocks, which stood about a hundred feet higher than the Pass. Up here, there was a raised ledge on the South-West face of the rib which was enough to prevent the tent being blown over. A few square yards of the ground were levelled with flat stones, and on top of this platform the tent was pitched, or rather secured with ropes and stones. Over the South-West parapet we had a sheer precipice overlooking the glacier-bay, the bottom of which was faintly visible through veils of mist; whilst to the North-East, a gentle down-slope of some thirty yards led to the edge of another steep plunge down to the Talung glacier, which was completely obscured by clouds.

The outer fly at the back of my tent came in very useful, by a cunning device of the Sirdar, who turned it into an *annexe*. Here we stacked the little luggage we had; and, soon after, the sibilant flaring of the Primus stoves and the bubbling of liquid promised me some hot soup. Notwithstanding all our precautions to make the tent as windproof as possible, the temperature inside dropped to 12° F.; and I can truthfully say that the loading of my photographic slides, with frozen hands, in a tent full of five men, proved a mighty task.

The night was cold and very windy. On one or two occasions the tent shuddered terrifyingly under the gale; then I heard a crash—and for a moment I thought we were being blown over the edge—but it was only the roof of the *annexe* and kitchen which had collapsed on top of the baggage, dragging down a couple of ice-axes and saucepans.

*SUNRISE OVER THE SUBLIME QUEEN OF THE SNOWS.*

AT ABOUT four o'clock in the morning the wind abated and the mists showed signs of clearing. The moon, half-way up the meridian, turned a streak of floating mist to pale silver. Gradually the clouds drifted away to the North and revealed one of the most magnificent spectacles of my dreams, moonlit and phantastic.

Slowly the moonlight gave way to the wan shades of the false dawn until the sunrise itself blazed over the mountains and lit every detail of this unequalled panorama. Kangchenjunga in the North claimed all my attention at first, rising from its shadowy depths to aerial heights. The second peak, at 27,820 feet, was the highest crest visible, flanked on either side by an icy saddle, cut off by the black spurs of the Talung Glacier-valley.

The twilight did not last long; the rose of dawn had scarcely crept over the mountain when its amber fire swept up and shrivelled it. And first the strong sun lit a rising cloud of driven snow over the peak itself, where the high-altitude wind-currents still persisted. One by one the peak, and all the sharp facets of its Eastern shoulder were touched with golden flame, and the sky-line stretched out like an incandescent

Sunrise on Kangchenjunga (*from camp II*).

Sunrise on Talung Peak (23,080 feet).
Guicha glacier and pyramidal Peaks, in foreground.

filament of gold. In a short time the sun had topped the Eastern mountains and had driven the last shades of night from the deepest valleys. I watched the Hunter of the East chase the flying shadows down the whole length of the Guicha glacier, from the pyramidal Peaks to its snout.

Kangchenjunga in the full light of morning must have made the most indifferent observer shiver with awe. The whole of its Southern face hung within a glance of one tiny eye—a stupendous wall from the 27,820 crest to the Talung glacier 13,000 feet below.

To the East, the shoulder sloped away with its enormous crags and buttresses of ice to the Zemu Gap, where it dipped suddenly into a snow-field in the Pass. It rose again to the heights of triple-crowned Simvu (22,300 feet), whose white shoulder I could see above the black, fissured rocks of a nearer spur. A little to the East, over the same rocks, Siniolchum (22,570 feet) thrust its lovely pinnacle above the distant haze.

Westwards of Kangchenjunga I could see very little of the great Southern spur and nothing at all of Kabru. Over the Guicha glacier, and to the West of the pyramidal Peaks at its head, the Talung Peak and Saddle were visible. Practically due West, the Dome stood up above the central moraine of the triple-glacier-bay. South of this, the Forked Peak rose out of the valley, behind the Aluktang glacier. And looking almost due South, the meeting of the glaciers, their outflow into the frozen lake and the valley of the Praig Chu, all dwindled into the deep, shadowy distance.

My original plan was to cross the Talung glacier and gain the Zemu Gap, and I turned my attention to this side of the Guicha La. I could see a slope of unbroken snow leading down to the eastward valley, and therein the Talung glacier, the surface of which appeared very messy, rather like a turbulent, rain-swollen river. At the foot of Kangchenjunga but little was visible of the extreme Northern end of that great snowy amphitheatre which forms the head of the glacier. A colossal rock, which seemed to have been hurled down the face of the mountain, lay among the drifts below. A ridge, running South-East, separated the Talung from the parallel Tongshyong glacier. To reach the Zemu Gap I planned to skirt the Southern end of this ridge and to pass up the corridor of the smaller snow-field.

I was studying the Zemu Gap itself when I heard a deafening crash from the direction of Kangchenjunga. Wheeling round I was just in time to see a colossal mass of snow and rocks cascading down the mighty Southern face. The rumbling of the rushing snow and boulders resounded and rocked round the valley, punctuated with distinct knocks from the stones as they rolled and leapt, and, as the avalanche hit any large obstacle, its snows were scattered in a polychromatic shower. I could not see the end of its fall, which was hidden by the nearer spurs; but the impact on the Talung glacier must have been terrific, for the whole of the Northern amphitheatre seethed with a spray of flying snow—like steam over a burst boiler.

The photograph facing page 28, taken some twenty minutes before the avalanche, shows a black rock in the valley which was smothered in snow when the cloud dispersed. The actual fall lasted about ten seconds, during which several tons of rock and snow were flung down. I then examined by telescope the upper face of the mountain and soon discovered the exact spot whence the avalanche had started. It was at the foot of a pyramidal rock to the right of the second summit, where the first rays of the sun had proved sufficient to dislodge a coat of superficial snow. I estimated the altitude at 24,000 feet; and the fact that the avalanche came down uninterruptedly over the 9,000 feet to the glacier, proves the steepness of that part of the mountain's face.

The weather again became threatening and before nine o'clock heavy clouds rolled up from the Talung valley. Reviewing the situation, I decided to postpone for a day or two the crossing of the Talung glacier, and to push a camp higher up to a place whence I could have a better view of the surroundings, especially towards Kabru and the great Western *arête* of Kangchenjunga. At the same time I would thus satisfy the desire which had been smouldering in me for the last few days, to set my ice-axe to work.

There was little to choose in deciding on the route to reach an elevated point in the immediate neighbourhood. Though I was well equipped with all that was necessary for a party of six to force a way up across a snow-slope, the head of the Main glacier which had appeared to me attractive from Chemthang, did not seem to be as promising from this point of view. The Northern end of the Guicha glacier, along the

*Saxifraga Arctica* (snow-white);
Gathered among the rocks above the Guicha La.
It is among the most arctic of the everlasting
species of alpine mosses. (About
one-sixth natural size).

cliffs of the pyramidal Peaks, likewise appeared a difficult slope, involving also the danger of falling stones from the steep rocks above. The only route that was left, with no apparent difficulties, was that along the Southern edge of the glacier, and this was my final choice.

*UP THE GUICHA GLACIER ON TO THE EASTERN SPUR OF KABRU.*

TO REACH the snout of the Guicha glacier we had to retrace our steps to the camp below, as the descent over the rocks to the North-West was totally out of the question. It was now 9-30 a.m. and we were again enveloped by clouds, so there was little time to spare. I sent a messenger down to stop the coolies coming up from Camp IV, but before the message reached them they had already got half-way. The descent was easy, except for the last bit over big, loose stones; and, in less than forty minutes, we reached the place where the coolies had camped the previous night.

Here we replenished our stores, and I organised a party of five including the Sirdar, two camera porters and one of the best coolies; a strong lad who had up to now distinguished himself in being always the first to arrive at the destination of the day's march. Our loads consisted of strict necessities only; full equipment, warm clothing, two small ten-pound high-altitude tents and a Primus stove; rice and a few tinned provisions, enough for a day, with a little extra thrown in in case of emergency. The remaining coolies were ordered to re-establish their camp here; and I appointed the senior coolie to be in charge of the others during our absence. This was the venerable Lama of the party—an influential man, good enough for this post, but perhaps too old for anything requiring more exertion than giving orders.

It was past eleven o'clock when we left camp. The weather conditions were not very bright, but in my optimistic way I was always looking forward to the time when the clouds should clear. Having surmounted a long mound, we reached the left edge of the Guicha glacier whose snout stretched across the bottom end of the V-gap, all confused with heaps of morainic rubbish. Here we came to a rocky spur which,

though toilsome at places, proved of great assistance in gaining some eight hundred feet height. At a few spots only, where the rocks were too steep and slippery, did we have to set foot on the glacier. The surface to our right was often extremely rough, with holes and small watercourses cutting diagonally across it; but no crevasses were noticeable. In a little less than two hours from the camp we had gained 1,200 feet, and stood at about 300 feet higher than the Guicha La. Here the ascent became steeper and we were confronted with a snow-field. The surface-condition was fairly good, though in one step out of ten the foot broke through the crust, and one sank in the snow to below the knee. I took the lead myself for the first half hour, the porters and the Sirdar following at a few yard's intervals. Then we reversed the order and the Sirdar had the task of beating the track. Occasional soundings with the ice-axe minimised the number of knee-deep plunges.

It was bitterly cold and misty when we reached, at 1-30 p.m., the foot of a very steep snow-slope. I had not realised until we had got nearer that this was the Western pyramidal peak I had seen at the head of the glacier from below. The aneroids gave the height as 17,050 feet; and here we came across a "snow-bog" whose powdery surface, driven from the cliffs and slopes above, had settled on a gentle incline. It puzzled me at first what direction I was to follow, especially as the mist added to my uncertainty. To the left I was faced with a steep cornice whose slope was not a bit attractive; so I decided to strike to the right in the direction of a snow-saddle, which I had examined from the Guicha La.

Before proceeding further we all needed a short rest and a halt of fifteen minutes was made for a cup of hot tea, ready in the thermos flask. The crossing of the "snow bog" was very exhausting as one sank knee deep at each step, and we were tired when it came to attacking subsequently an ice-fall which led to the saddle, South-West of the double-apex Pyramids. Here we roped-up to negotiate a series of *séracs* which had choked up the chasms of the lower ice-fall. Further up the ice was shattered in all directions, forming rectangular masses cut across by cracks and clefts. I recollect more than one instance of an impasse where we had to retrace our steps; but on the whole we worked steadily through and within three-quarters of an hour had attained the lower

saddle between the two pyramids. Up here there was a very strong wind blowing, and no shelter apparent.

It was about three o'clock and I planned to work round to the North of the double-apex Pyramid, hoping to find there not only leeward protection but also a better climbing route for the last lap. Without much difficulty we manoeuvred round the edge, and my sanguine expectations were fulfilled by a promising slope leading to the upper saddle, which was faintly visible through a rift in the mist. The aneroid readings gave 17,930 feet and I estimated that another 800 feet separated us from the summit. The snow was in good condition; and an ascent over a fairly steep but easy slope brought us in one and a half hours to the upper saddle between the double apices. As we reached the higher levels we were again met by the full fury of the wind, and the cold was intense. Nothing could be seen of the surroundings beyond a few hundred yards, and, with our previous exertions, the mastery of one of the crests would have been pointless, besides involving considerable risk and discomfort. It was nearing five o'clock and time to seek shelter for the night. Conditions were so unpleasant that I merely took altitude readings, showing 18,660 feet, and started the descent.

A halt of ten minutes in this cold wind had proved sufficient to benumb my limbs, and I had some difficulty in taking the first steps. We effected the descent over the same track, all the time looking for a tolerable camp-site. It is surprising how difficult it is to find even a few square yards of anything approaching level ground on these mountains. Eventually, as the night was drawing near, we had to be content with a rough shelter under the lee of an ice-cliff, beneath which was a slight hollow. Here the cold, lumpy ground was levelled as well as possible with the ice-axes, and our small tents were pitched in the hollow. Barometrical observations gave the height as 18,350 feet, or 1,825 feet higher than our previous camp on the Guicha La.

The night was more than bitterly cold, the minimum temperature registered being 6° F.. The only effect of the height was that one of the coolies complained of severe headache; but this passed off with the administration of aspirin. I felt too tired myself to attempt any cooking on the Primus stove, but it was lit to prepare fresh tea, to which I added a few tinned provisions. This camp was only fifty feet lower than

that I had pitched five years before on Kangchenjau glacier, and the memory of that trip passed like a dream through my mind as I fell sound asleep.

In the morning the Sirdar woke me at five o'clock, to report that the clouds had not lifted and I considered that it had become hopeless to wait here for an improvement in the weather. The food that was left was just sufficient for the day; but before turning my back to these inhospitable heights I decided to make a last dash to reconnoitre what the weather would allow me to see of the Eastern ridge of Kabru.

In making my plans for the day I decided to push south-westwards, hoping to find a practicable way along the snowy saddle which lies at the back of the rocky spurs heading the Main glacier. If it were feasible, my intention was to seek a route down the Aluktang glacier. From the observation point above Chemthang, a couple of days ago, I had carefully studied the position of these rocks relative to the snow saddle; but, at the same time, I had seen little of the upper slope, and knew that what appears practicable from down below may often prove not so when viewed from close quarters. Anyway, the snow was still in good condition and the wind which had completely abated promised a less toilsome march than that of the previous day.

We left camp shortly after six o'clock and roped up to negotiate the short descent of a couple of hundred feet, which brought us to the saddle above the upper slope of the ice-fall. Here we met a steep snow-slope, difficult in parts, and our progress was consequently delayed. I had to cut steps for about 200 feet in hard snow-ice and, when this obstacle was overcome, we had only gained about 75 feet in height. Then followed an easy traverse ending in a rocky, slippery surface, mostly covered by *verglas*. I had some difficulty in ascertaining our exact position but, from the distance we had covered, we could not have been far from the snow-saddle I was hoping to reach. The pyramidal peaks had long ago been obscured by clouds, and, a short distance ahead, a mass of black rocks, partly snow-covered, appeared faintly through the mist. Steering by compass in such a place is next to impossible, when not only is one's own position difficult to locate; but, even if this be determined, obstacles may compel several detours in directions entirely different to that originally decided upon for the march.

After a somewhat circuitous wandering among these rocks we came to more even ground, which helped progress considerably. At eight o'clock I halted for twenty minutes to take readings of altitude and temperature, which stood at 19,225 feet and 18° F·. I cannot do better than to quote here the passage of my diary which reads: "satisfactory progress but miserably dull and cold, persistent clinging mist obscuring the view beyond fifty yards".

The direction we then followed was almost due West, over a fairly steep snow-saddle. The surface condition was good at first, but further on the presence of occasional crevasses made the use of the rope necessary. This ascent proved very exhausting and we had to stop every ten minutes to regain breath. My pulse was beating hard. Here the slope became steeper and narrowed towards a dark rocky peak whose top was hardly visible in this dim atmosphere. The last effort of a vanishing hope, or perhaps the impulse of conquest carried me on towards its summit. Further progress in these conditions was obviously hopeless; and, having left the three coolies near the shelter of a rock, I breasted the last lap of a couple of hundred feet with the Sirdar. It was a stiff rock-climb; and when we reached the summit I was out of breath for several minutes. The three aneroids and a thermometer were the only instruments I had taken with me and these gave the height as 20,150 feet, and a temperature of 11° F·.

Perched on this eyrie I gazed round trying to pierce the opaque sheet of mist which enveloped us, but nothing could be seen beyond the near rocks sloping down towards what seemed to be a bottomless abyss at our feet. Ten minutes at this height proved more than enough to chill me to the bone. It was past eleven o'clock and time to retreat.

We retraced our steps; but it was not without difficulty that we were able to find our way through this chaos of rocks. To seek for a new route down the Aluktang glacier was out of the question, as I was unable to determine our exact position, except to estimate that we were somewhere near the head of the glacier and that the peak we had climbed could not have been far from approximately a mile North-East of the Dome.

After a toilsome march of nearly six hours, including short halts on the way, we reached Camp IV, where we were heartily glad to

be back among the flesh-pots once again, with a good fire, unstinted covering for the night, and solidly cooked food after our two days of iced nastiness in tins.

There was no improvement in the weather for the rest of the evening, and the packed clouds grew even more threatening till, at nine o'clock, we had a light snow-fall. Notwithstanding the continuance of bad weather the coolies kept up their usual spirits, and, in fact, I do not remember having seen them before as gay as they were that evening. They had lit what I considered a wasteful fire, regardless of economy in fuel. For my part, I was sorely perplexed as to my prospective movements, and I summoned the Sirdar in my tent to discuss matters with him.

My next object was to find a route to the North as time did not allow me to prolong the stay at Camp IV. Then came the question of finally deciding on the route to follow. My original plan was to test the Zemu Gap, the nearest Pass to the East of Kangchenjunga, on its great Eastern spur, immediately to the West of Simvu. Mr. Freshfield's "*Round Kangchenjunga*", a narrative of his great expedition round this mountain in 1899, will, I think, remain for years to come the predominant authority on this mountainous region. Relating to this Gap, Mr. Freshfield, who approached it to within a couple of miles from the North, on the Zemu glacier, writes: *The snowy corridor leading up on this side to the 19,300 feet gap is by no means steep, and, when the snow is in good condition, a party of roped mountaineers should have little difficulty in walking up to it. To attempt to descend on the other side into the Talung valley would, however, as we afterwards ascertained, be a far more doubtful and hazardous experiment. It is one which in my opinion ought not to be made.* And on examining this Pass from the Guicha La (about 5 miles distance), Mr. Freshfield's account reads: *The slope below the Gap has an unpleasant resemblance to the Güssfeldt Sattel, in the Bernina Group, but no slope can be judged until it has been tried. If this gap should prove practicable for coolies, it will be of the greatest service to mountaineers..... My impression, however, is that this gap, though it can be forced by mountaineers, will prove of no use for a baggage-train of natives.*

The conclusions I drew from my own observations of the previous day from Camp II, coincided with Mr. Freshfield's opinion regarding the Southern slopes of this Gap. On the other hand, conditions of snow

and weather are worthy of much consideration; and, during the last two days, I had been lucky in the former but unlucky in the latter. Another factor I had to bear in mind was the variable nature of weather conditions in the Himalaya — greater than in many other parts of the world. One may start off in the morning under most favourable conditions and be caught in a snow-storm before the day is over. The terrific storm Mr. Freshfield's party experienced, when on the Zemu glacier, lowered the normal snow-line by four thousand feet. I concluded therefrom that the conditions I would have to face should normally be better in that respect. The other possible route, leading to the North of the Zemu glacier, lay over the Simvu Saddle, of which little is known, at any rate of its Southern slope. This Saddle (18,000 feet?) stretches between the slopes of Simvu to the West and Siniolchum to the East. I believe it has never been reached, but Mr. Freshfield's account refers to the Northern slope as feasible; and it was his intention to climb it had he not been prevented by the unfortunate storm. Regarding the Southern slope I knew nothing, as it did not show to advantage from Camp II. The third and last route we discussed (I believe the easiest, but the most distant) was the Yumtso La (15,800 feet), at the head of the Rindiang Chu, leading to the Eastern extremity of the Zemu glacier and West of Lama Anden (19,210 feet). This Pass was crossed by Messrs. White and Hoffmann in 1891, and has perhaps been tackled by others since.

In reviewing the whole situation, and taking all probabilities into account, I finally decided not to deviate from my initial plan of testing the Zemu Gap; but to do so with a small party of picked men, with light loads, instead of dragging the whole party of 27 coolies, among whom there were a few whose ability in snow-fare I had reasons to doubt.

Tired as I was I did not delay my sleep after I had completed the sorting of the equipment required for our further march. It was a cold but windless night.

*ACROSS THE TALUNG AND TONGSHYONG GLACIERS TO THE ZEMU GAP.*

AT DAWN it was freezing hard and the overnight snow had powdered the landscape with a thin coat of fresh whiteness. In this clear atmosphere I hoped at last to have a good day's photographing and surveying; and I therefore speeded up the final preparations for the start. The small party consisted of eight in all with sufficient provisions for four days, the essential instruments, and an extra supply of clothing—apportioned so that no load exceeded 32 lbs.. Six men were ordered back to the Aluktang valley for fuel, and the remainder of the expedition were to stay at Camp IV until further orders.

Shortly after seven o'clock we set off up the rocky slopes of the Guicha La. I had by now grown acclimatised to these heights and we reached the Pass in less than an hour, finding it far easier than before. Kangchenjunga in the North was a superb sight, rising majestically above its walls of ice. To the West, however, distant clouds had already gathered and were pressing up the valleys. I foresaw another dose of mist; but speculating on a clearer atmosphere at the lower levels, pushed on, after only ten minutes on the heights of the Pass.

Descending the Northern slope, I found the snow in good condition, with a fairly crisp surface; and satisfactory progress was made for the first half-hour. I took a number of clinometer measurements to estimate the angle of the snow-slope, which showed an average of 19° against 32° on the Southern side. The first banks of mist had by now reached the long spur along the North-East edge of the Talung glacier; and, in a short time, its crags were smothered in clouds. The great snowy amphitheatre at the head of the glacier, gradually revealed itself; but I had only just time to glimpse the colossal ice-wall below the Talung Peak, when the mist blotted it out of sight, storming the precipice and gaining the Talung Saddle. Simvu in the North-East bore its head above the clouds for several minutes, until, at last, it also was engulfed in the ubiquitous haze.

We had descended some six hundred feet when we came to a greensward where alpine flowers were growing in profusion. I particularly noticed beautiful sky-blue gentians, clumps of edelweiss and several species of *Saxifraga*. This place would have made a very good camping-ground for there was only a little snow in patches and it was generally sheltered from the southerly squalls. In half-an-hour we reached the end of the

Talung glacier.
From descent North of
Guicha La.

Simvoo (22,300 feet).

grassy slope, where the turf tailed off into the right lateral moraine of the Talung glacier. I examined some of the stones of the moraine and found them to be chiefly Augen gneiss with traces of Biotite schist. The height, as determined by several observations, was 15,480 feet—900 feet below the Guicha La; but I would not take the stone structure as typical of this height, nor of the immediate surroundings, for the blocks must have been carried down by the glacier from the heights of Talung and its spurs.

Here we were confronted with the problem of where to cross the glacier; and I disagreed with the Sirdar, whose opinion was to skirt the moraine entirely, as far as the South-Eastern extremity of the Talung glacier. I considered this route to be a useless detour, involving not only a descent of about 1,500 feet, but also the danger of falling stones from the steep slopes to our right. I therefore decided to effect, or at least to attempt, a crossing at the spot we had reached. After a certain amount of scrambling over a chaotic wilderness of loose stones and debris, we struck hard ice mixed with morainic rubbish. This was the first step leading on to the glacier itself, which, at this spot, was almost on a level with its stony embankment. The spur to the North of the glacier was completely veiled by mist; and my compass served therefore as our only guide. I fixed North-East as our general direction, trusting to luck in any small deviations that local obstacles might compel.

The glacier-surface was fairly even at first, and the apparent absence of crevasses made the use of the rope unnecessary. Further on, however, it grew more lumpy and irregular with rows of ice-hummocks and treacherous cracks which had to be negotiated with care. Our progress was consequently delayed, and to make things worse, about half way across, the mist thickened. From here we struck to the East, where the surface appeared to be more even; and after a march of over an hour from the Southern moraine, which had seemed to me an eternity, we reached the other end of the glacier. And still our toils were not over, for we were again faced with a scramble over heaps of loose stones; and presently the slope grew more difficult. Here a long morainic wall of rocks, at an unpleasant angle, checked our further eastward advance. I was more perplexed than ever as to the next move, when the Sirdar, who was slightly ahead of me, shouted back that he

had found a way some fifty yards further South. It seemed to me impracticable at first; but, after a good deal of hand and knee clambering, we succeeded in gaining the top and in finding a passage which brought us to the foot of the rocky spur.

Though it was only just past noon, I decided to look for a tent-site, as I thought it unwise to attempt any further advance under the prevailing conditions. The best place we could find was a tiny stretch of almost level ground at the foot of a projecting rock, where, if not comfortable, we were at least protected to a certain extent from falling stones.

For most of the afternoon, which seemed endless, I was occupied with the amplification of the somewhat hieroglyphic signs of my diary—the only notes time had permitted me to make during the last two days. Then I took barometrical observations, which gave the height of our camp as 15,750 feet; but owing to the persistence of the mist, I could only estimate our position to be about a mile from the Southern extremity of the spur which separated us from the Tongshyong glacier. Towards sunset there was a sign of the clouds lifting, and I planned an early start for the next day. In the stillness of the night, the only sound that kept me awake was the rumbling of many small avalanches, which echoed in the valley like distant gunfire.

The following morning I was disappointed to find that the weather was generally unchanged, and that vapours were still clinging to the upper slopes, masking the head of the amphitheatre. My optimism failed a little when I considered the project of the Tongshyong glacier; but the lower levels were clear of clouds, and from above the moraine I obtained a good, though not very extensive, view of the Talung glacier. Its surface, which I examined carefully, appeared like a rough sea, with grey waves heaving and breaking into broad flecks of white foam—these were symbolised by the greyish mounds of ice, here and there cut to show a white facet of clean ice. To the South-West, across the glacier, the rocky heights of the Guicha La piled up in a blurred sky-line; whilst to the South-East visibility was limited to about a mile, beyond which the mist and glacier merged into an indefinite white haze.

It was almost impossible to keep oneself warm, standing still, in this penetrating cold, and the only way to make the blood flow was to

resume the march. My plan was to explore the approaches of the Gap, and to push a camp as high as possible, leaving the last lap to the following morning. After a good meal, which I thought might have to satisfy us till late in the day, we packed up and set off shortly after six o'clock.

At first we followed along the left lateral moraine of the Talung glacier in a south-easterly direction, zig-zagging among shapeless heaps of debris, and ascending now and then mounds of loose stones to avoid concealed pits and pools of frozen water. The ice-bed to our right produced an occasional crackling noise, characteristic of a living glacier, whose downward, sinking movement is slow but intermittently regular. Here we came across a glacier-table, with a great polygonal rock, of a most curious shape, perched on a pinnacle of ice which rose a couple of feet above the glacier-surface. The action of water and the tremendous evaporation which takes place when the sun's rays strike on the ice had been responsible for this fantastic piece of architecture. I could hear the murmur of water trickling underneath the glacier and percolating through the stones of the moraines. It is difficult to describe the impression created upon the traveller by the sense of estrangement from the world produced by the uncanny silence filled with such unfamiliar sounds. Yet, comparing this impressive solitude by a glacier with that by a rushing torrent in the lower valleys, one is forced to the realisation that the same law governs both. Gravitation is at work, and water or ice must find their own level, irrespective of the speed at which they do so.

Looking at these vast masses of rock and ice, I often wondered if the supply were inexhaustible. In æons to come might not the surrounding giants quite alter their form — even melt like snowmen — with this constant attrition of avalanche and glacier-erosion, which seems to strip them of their vesture, denuding the mighty shoulders and tumbling the living rocks down to their feet?

I am afraid I have gone into geological theories which are really beyond my powers to support; so I had better resume the march. After an hour's wandering among this living museum of natural marvels, we reached at last what seemed to be the end of the long spur to our left. Here the snout of the Tongshyong glacier emptied its colossal heap

of debris across the steep mountain slope. The main moraine, however, terminated some 350 feet higher up, and mist made it impossible to estimate its exact direction. All I could see was a steep, rocky slope leading to the recess of the glacier. To find a way up the loose stones was not an easy matter, and it was only after a long half-hour's search that I decided to strike diagonally across the slope, a couple of hundred yards to the West of a runnel which appeared to issue from below the moraine. The stony desolation we had to traverse was beyond all imagination. There were all the difficulties of a steep slope, the doubtfulness of steering towards a height which every now and then was blotted out by mist, and the maddening effort of struggling over loose and tipping stones of all shapes and sizes. The infernal journey seemed interminable; and we had to make several short halts to regain our strength, until we finally reached the right lateral moraine of the glacier.

From here our march was somewhat easier, following the course of an icy streamlet, which must have served as a drain to the Western flank of the dividing spur that still concealed the glacier. As we emerged from this corridor, suddenly the glacier came into sight, with a steep snow-slope descending from the great spur to the East. The place we had reached was exposed to a cold wind, which prevented me from making a prolonged stay to examine the surroundings; I therefore confined myself to an altitude reading which gave 16,150 feet; the rises in height being 400 feet from Camp V, and 735 feet from the point where we had commenced the day's ascent, below the snout of this glacier. From these figures the steepness of the frontal moraine, and the difference in level between the Talung and Tongshyong glaciers may well be imagined. About a hundred yards further on we came across the scanty shelter of a rock, where we halted to decide on the next move.

It was nine o'clock and the unrelenting clouds showed no signs of unveiling my goal. We could not have been more than three or four miles away from the Gap; but it was a question of finding a route across an untrodden snow-field with unforeseeable obstacles on the way. In normal weather-conditions, when visibility is good, there should be a better chance of avoiding dangers, whereas, in this case, I had to take my chance of following what would appear to be a practicable route.

The glacier, which stretched for about half-a-mile before me,

had an unpleasant resemblance to a staircase, at an angle rather difficult to estimate. The steps, typified by its transversal undulations, were regular and ran approximately North-East to South-West, with a greater incline along the Western edge. The ice was clean and of a blue-green hue, unlike the dirty grey of the Talung. No crevasses were visible from this point of view. I decided to cross the glacier at this place so as to reach its Eastern edge, which promised a more feasible climb. For the sake of precaution I formed two roped parties — one with myself at the head, followed by the camera porters; and the other led by the Sirdar. The snow was hard and at many places I had to cut steps across steep slant-faces of ice. Our progress was as good as could be expected, and in less than an hour, with no mishap on the way, we reached the lateral moraine of the glacier.

For the next half-hour we scrambled over rocks covered with ice, when, suddenly, we were brought up short by a great chasm, some twenty feet wide. We had to retrace our steps for a little way and take to the centre of the glacier again; but here also the surface was shattered, and transversal crevasses prevented any headway. After this fruitless crossing, which cost us an hour's hard work, I had reluctantly to fall back on the Western edge.

We had now reached the upper level of the slope I had seen before traversing the glacier, and in front of us lay a long stretch of a more even surface which gave promise of a good advance. At first it was almost level and we made fair progress for about half-a-mile; but, as we pushed on, the rise grew parabolically steeper and became very exhausting, though the snow was in good condition and no serious obstacles presented themselves on the way. In a little less than two hours we reached the lower end of an awkward-looking ice-fall (presumably the one I had seen by telescope from the Guicha La, on my first ascent of that Pass). Here the surface was split up into great rectangular blocks with deep parallel clefts. The upper slope was concealed by mist and I halted for a while to decide on the direction of attack. Altitude readings gave 17,490 feet.

I tried to discover a passage along the rocks to the West; but they proved unsurmountably steep and dangerous. The ice-fall at this place descended in three successive cascades of *séracs*, separated by

slanting terraces. A gap at the end of the first slant was found to be equally impassable. After several fruitless attempts in other directions, I eventually decided to strike to the East again. A couple of hundred yards further on, a natural bridge of ice, formed by a fallen mass of *sérac*, helped us across the chasm, which would have otherwise been impracticable. This obstacle overcome, we were still faced with the difficulty of finding a way through a confused maze of ice-pinnacles, where the greatest care had to be exercised to avoid accidents. One felt as if one were in an enchanted forest of trees turned to ice, wherein not a breath of wind stirred, and utter silence reigned, broken only by the crackling of icicles, like fallen branches, under our feet and the tinkle and splash as the fragments fell into the pits and crevasses which gaped at our feet. The thin trickle of water came up faintly from the depths. Slowly but steadily we worked through and, when we emerged from this labyrinth of ice-corridors upon the flatter but still wavy glacier above, we were again met by a strong wind. Aneroid readings gave the height as 17,635 feet; and we had therefore gained only 145 feet in reaching the upper limit of the ice-fall.

Here a small, secondary glacier, down the slope to our left, made a barrier of bluish ice falling abruptly towards the Tongshyong. At the point of intersection there was almost a complete absence of morainic debris, which must have been buried deep in the snow. Beyond this, the surface-snow grew softer, and the slope once more rose steeply between the walls of the great side spurs which seemed almost vertical at this place, as they narrowed towards the Zemu Gap itself.

Visibility was disappointing and had, if anything, deteriorated; while threatening grey clouds, coming up from the South, passed swiftly above our heads in the direction of the *col.* We plodded along for a short distance until exhaustion and the menace of a storm reminded me that we were approaching a height and locality where prudence was essential. I was therefore on the lookout for a suitable place to camp—a need which was rapidly becoming of desperate urgency. We went on and on in the deep snow, till, for the first and only time on the trip, my perplexity was increased to a real anxiety. This was accentuated by the pitiful state of two of my coolies. They were trembling, teeth chattering, both complained of severe headache; and wound up by sitting

on the snow, swearing that they could go no further. I gave them a little brandy and tried to persuade them with encouraging words; but in vain.

It was nearing three o'clock and I felt pretty certain that, if we were to retrace our steps, we should be overtaken by night long before reaching the site of Camp V. On the other hand I thought that going back a short distance might encourage the coolies, and we would perhaps find a hollow or some rock to protect us against the wind, which was now blowing hard enough to prevent tents being pitched in the open. I was about to give the order of retreat, when two of the camera porters, who had been searching the surroundings, ran back to tell me that they had discovered a good place for camping, some hundred yards further on.

The suffering coolies seemed to recover on hearing the news, and within a few minutes we were under shelter, in a hollow cut deep in the almost vertical wall of the Western spur. I could not have hoped to find anything better than this grotto, which offered protection not only against the wind but also against avalanches. We had ample room to stretch sleeping bags and to do the cooking. While the Sirdar prepared our meal, I took altitude observations which gave the height as 17,940 feet. We had gained a height of 2,190 feet from Camp V on the Talung and we had been a long nine hours on the march, including a couple of hours' halts. The temperature registered outside the cave at eight p. m. was 9° F., and the minimum during the night was 6°.

The coolies lit a small fire with the few pounds of wood they had frugally hidden inside the loose folds of their garments. It was some kind of aromatic rhododendron collected near the Talung slopes, and when its last twigs were thrown into the fire, the grotto was filled with a mephitic smoke. They sat close to each other, and almost to a point of burning their boots in the flame, singing monotonous little tunes, and beating time on their cooking outfit of empty provision tins.

Late in the evening the wind slackened, and was replaced by the rumbling of avalanches. We were much nearer to these baneful falls that night and I could distinctly hear the rolling of the stones, which sounded exactly like a lorry passing at full speed over a stony road. One of the worst falls woke me up with a sense of terror, coupled with

the memory of the avalanche I had seen a few days before across the face of Kangchenjunga.

The day broke yet again unchanged, with the same greyish clouds concealing all but our immediate surroundings. The wind, which had subsided during the night, again sprang up from the South, and in the circumstances I saw very little hope of succeeding in any photographic or survey work. This was the fifth day at altitudes over 15,000 feet, and the weather had been miserable all the while. The distant views from these heights must have been magnificent, and I was still hoping to catch a glimpse of the visions which, so far, had been denied me. On the other hand I could not indefinitely prolong my stay in a provisionless country, where the duration of travel has to be regulated according to supplies available; and I had further to allow for probable delays due to unforeseen weather conditions.

The two invalid coolies had completely recovered from their headache; but when they heard of my plans to push further on, they promptly found some other pretext of complaint. Anticipating more trouble than use in dragging them again on to the snow, I decided to leave them here with sufficient food and another "broken reed" who bravely volunteered to keep them company until my return.

My plans were to reach the Gap with the least delay and to ascertain if a descent were practicable on the Northern side. If so far successful, my next project was to push a camp as far down as possible, so as to visit the head of the Zemu glacier early on the following morning, returning to Camp VI in the afternoon of that day. Supplies were still ample, so there was no necessity to stint ourselves; but because of the reduction in porterage I had to confine myself to bare necessities. I therefore hastened to re-apportion the loads which now included only one of the ten-pound tents for the five of us, one of the cameras with other instruments, clothing, and food for two days.

It was nearing seven o'clock before all these arrangements were completed; and after striking some hundred yards eastwards, to avoid a crack cutting diagonally across the Western edge of the glacier, we roped up and set off in a northerly direction. The morning was very chilly and the strong wind drove the clouds furiously up the narrowing passage leading to the *col.*

The ascent was gradual at first, and the condition of the snow was better than that of the previous evening. We made good progress for half-an-hour and gained a height of 160 feet from camp (barometrical observations, 18,100 feet), when a steep slope gradually revealed itself ahead of us through the mist. As we got nearer, I was exasperated to discover that it was another ice-fall — perhaps the beginning of the last barrier separating us from the Gap, which, according to the height given in the maps, must have been another 1,200 vertical feet higher.

Our first obstacle was a fairly wide crevasse whose edge seemed particularly unsafe; but we managed to effect a crossing after some detours to the East. Here we found ourselves entangled in a chaos of *séracs* and terraces similar to those of the lower ice-fall. Four successive slopes were thus gained after a good deal of step-cutting; but we were still a long way from seeing anything which might have suggested our approach to the upper limit. The ground consisted of hard crackling snow-ice with, here and there, bare, slippery ice shining through. Not a breath of air stirred the atmosphere, which had become stifling in this icy labyrinth. The grey sky above was more obscured then ever, and, before I had time to realise the reason of this sudden change, the first snowflakes appeared, falling slowly and quietly through the windless air.

I knew that the final slope could not be far from the place we had reached, and, as the snow caused no immediate anxiety, I decided to push on. After some very rough going, we came to a furrow where the *séracs* were arranged in a line permitting good progress. We soon reached the upper level, and the next hour saw us struggling up the steep slope leading to the *col.*

It was now snowing hard, and the last lap, of a couple of hundred feet, proved very exhausting. At 10-30 we had gained the highest point of the Pass, from where a gentle slope vanished in the depths towards the North. Visibility was limited to the stupendous rocky walls which rose almost vertically on either side of the Gap. We were about a hundred yards from the base of the Western spur; whilst that to the East, forming a buttress of Simvu, was faintly visible through the mist. It must have been some three hundred yards away. Of the Zemu glacier nothing could be seen through this white veil of drifting snowflakes eddying against the fathomless grey sky.

Though there was only a light wind blowing from the South, it was bitterly cold, and I imagine a position on this *col* must be untenable in a strong wind. Heavy snow was falling and the deep drift around us had already been coated with a few inches of fresh whiteness. To attempt the descent, or even part of it, to the North would have been madness and complete disregard of any mountaineering rules; not so much for the probable difficulties ahead, but for the danger of being cut off from the South, if the snow were to continue for any length of time.

In the circumstances I was forced to turn all my ambitious plans into a hasty retreat. I took careful and repeated barometrical observations of the highest point of the drift, which gave 19,375 feet. Then, before quitting the place, we advanced towards the Western wall, by the foot of which we raised a small cairn with a few stones. A *crampon*, which had been broken on the last ice-fall, was placed in a cranny of the rock above; whilst the coolies murmured a prayer to the divine goddess of Kangchenjunga, and threw, as is customary in their religion, a handful of rice on the heap of stones.

*RETREAT.*

IT WAS not without regret; that I gave the order to retreat; and a weary feeling crept over me because of the disappointment I had just faced. The snow was falling fast, and the descent seemed to me much more tortuous than the ascent had been. At any rate the downward march occupied almost the same number of hours as the climb; and by the time we had worked through the upper ice-fall, and completed the short stretch to Camp VI, it was past two o'clock.

On my arrival at the grotto I found the three coolies shivering with cold; they had covered themselves up with their blankets and had evidently not moved for the last seven hours. I doubt whether they would have survived had I left them here until the following evening. Meantime the weather had become worse; and with no fuel and an impending danger of the retreat to the Talung being cut off, I decided to make a forced march down to Camp V on the same day. I allowed

half-an-hour for a meal and for tea with brandy which was most restoring in such circumstances.

At three o'clock we left in most unfavourable weather. The snow was piling up; and the change that had taken place in the surface-condition since the previous day, soon made me realise that my decision to return to the lower levels had been a wise one.

In the last few pages I think I have written enough about mountain difficulties and about sufferings; and to recount those of our downward journey would, I am afraid, burden both my account and the reader with details of adventures and incidents which, after all, should be expected when travelling among the remote corners of the Himalaya. Personally, I consider that mountain-travel without its characteristic incidents would lose half its pleasure—not because I despise comfort, which is always welcome, but because I doubt whether much could be achieved on the higher slopes if the necessities required for "comfort" were to accompany the traveller to those levels.

My conclusions regarding the Zemu Gap are that, though it has proved practicable but difficult to native coolies, the saving in time would hardly compensate the traveller whose aim is to reach the Eastern approaches of Kangchenjunga. Even under more favourable weather-conditions, and with picked and specially trained men for high altitude climbing, I still think that venturing this way will not prove very advantageous. I can safely say that one should not rely on this Pass as an open line of coolie-transport for a base camp on the Zemu glacier.

We continued the march, plodding through snow and scrambling down over stones until eight o'clock, when we reached the rock of Camp V. The last two hours had been in darkness, and it was still snowing hard when the tents were opened.

During the night the weather remained unchanged and the morning brought a new problem of the ever-deepening snow, due to the almost uninterrupted fall of the last eighteen hours. Drifts were all piled up a clear extra foot. I considered staying a day here; but abandoned the idea in fear that conditions might grow worse rather than better, and so involve us in no little danger. We therefore started early for Camp IV, where I hoped to have a badly-needed rest, after the ardours of the last five days.

The crossing of the Talung glacier proved extremely slow and, at first, it seemed to me as if we were making no headway whatever. Visibility had slightly improved and no flakes were dropping; but this was more than outweighed by the toil of knee-deep ploughing through a treacherous layer of fresh snow. The worst part of the day's march was up the slope leading to the Guicha La, which we reached after a struggle of nearly three hours. The descent, however, over the Southern side proved somewhat easier, notwithstanding a persistent mist which prevented us from sighting the camp until we got to within fifty yards of the tents.

After four days of strenuous but vain effort to attain the Zemu glacier, one experienced a sense of unreality in being back at a good camp, by a crackling fire. My eyes lit on a huge pile of wood, brought up according to my instructions from the Aluktang valley, and I could not help projecting in my mind a possible fresh attempt to the North. With all these supplies ready, the temptation was intense, and especially so after the last few days' privations. I suppose it was like a starving man, who will fall upon food and choke himself, if he be not restrained. I remembered this and also that one may plan great things in comfort; but that one is always brought heavily against facts when one attempts the accomplishment. I therefore put aside all such dreams till my next visit to Sikkim and concentrated on the return journey. I was determined to achieve the photographic work along the Singalela Range and this decided me to return again via Jongri. I had a few more days to spare and, weather permitting, thought of utilising them in reconnoitring the Rathong glacier and the approaches to Kabru from that side.

During the long afternoon I spent at Camp IV, the weather remained dull; but towards the evening the mist thinned and there were at last signs of the sky clearing. Even here, where there had hardly been a patch of snow on our outward journey, there was now a white blanket, in which the valances of the tents were buried, as if they had been pitched several weeks ago. The night was windless but cold; and the minimum temperature registered outside my tent was 11° F.

It may be of interest if I give some details of my experiences with invalids and mountain sickness. Besides the two coolies who had

suffered from severe headache at Camp VI, the sick-list of the last week included also a case of frost-bite which, however, was not a very serious one. In the absence of any better medical treatment the sufferer's toes had been rubbed with snow and he recovered in a day, subsequently accompanying us for the rest of the tour without any difficulty whatsoever.

Another case which caused me some anxiety at first was one of snow-blindness. I had suffered from this myself, when on a trip to the Passes of Tibet, six years ago; but then it was only for one night that I had the pain. The state in which I found this coolie was probably far more intense than that which I had endured. The application of a few drops of castor oil in his eyes proved very soothing, but he had to be helped along for the next two days and only recovered at Jongri. Such cases usually occur through the obstinacy of a coolie who, though provided with snow-goggles, prefers the primitive way of smearing his face with soot or wrapping his head like a mummy. For a case of diarrhœa, I found Tabloid Beta-Naphtol Compound a very efficient cure.

With regard to symptoms of mountain sickness and difficulty in breathing, I recorded nothing beyond a slight lassitude and the headaches to which I have already referred. These were particularly noticeable between 16,000 and 17,000 feet, and were accompanied by a slackening of pace and occasional shortness of breath.

By the preceding paragraphs I do not wish to undervalue the quality and constitution of the Sikkim coolie. His physique is magnificent and he is a born hillman, with the natural characteristic of fitness, engendered by a hardy, open-air life from infancy. He may also be expected to have an instinct for mountain-fare, and, it follows, will grasp the use of rope and ice-axe fairly quickly. Any traveller, who has to become acclimatised, get fit, and adapt himself to the peculiar conditions of the mountains, will obviously start at a disadvantage to the man who is born and bred among the foothills leading to the great heights.

*THE RETURN TO JONGRI.*

THE NEXT DAY broke unexpectedly fine; and remained so for an hour only. It seemed as if the Clerk of the Weather had decided to concentrate several days' sunlight into that short space, for one's eyes were dazzled by the intolerable whiteness stretching away in all directions. Then the morning vapours began to gather and soon the glacier-valley was bathed in a luminous mist.

The packing of the tents and provisions proved an unusually long process that morning, either on account of the accumulation of *impedimenta* or perhaps because the coolies were intentionally trying to delay the start in order to break the journey at Aluktang. All was finally ready for the march; but the big pile of wood had to be left behind, and, as the Sirdar regretfully remarked, the next traveller should consider himself very lucky to find ready-cut fuel at that place.

We left camp at eight o'clock. Though it would have been possible to reach Jongri the same evening, there was still a lot of snow in the direction of Chemthang and I decided to split the distance into two stages. The snow was soft and at many places had turned into slush, concealing loose stones; all of which delayed our progress. Beyond the lower lake, whose surface I found entirely frozen, there was less snow, and, at eleven o'clock, we were descending the rocks of the moraine which brought us to the grassy slope of the Aluktang valley. Here the snow was scattered about among clumps of withered grass. Another hour's easy walk brought us within view of the knoll behind which the tent had been pitched before.

Whether it was the sense of hearing or that of scent I could not say; but we were still about half-a-mile away when the sound of a distant bark caught my ear. The sound approached quicker than I did, and within a couple of minutes there was "Ronnie" jumping all over me, leaping and barking like a mad thing. His delight continued for the rest of the day, and it was utterly impossible to keep him quiet.

When we reached Aluktang, the whole party was once more united round the roaring fires of a comfortable camp. Late in the afternoon the sky cleared and the summits of Pandim and Jubonu glistened in the pale light of the setting sun.

My project for the next day was to climb Kabur, the conspicuous tooth-shaped rock, rising some 2,500 feet above the Jongri plateau,

Jubonu at dawn from Camp IV.

Jubonu from above Chemthang.

Sunset on Pandim,
from Aluktang.

Jubonu, 19,430 feet,
from Aluktang.

a couple of miles due North of the huts. As I expected to meet with more snow on the heights, I again decided on a small party of five — by far the easiest and quickest way of moving at such places. The rest of the party, with invalids and heavy baggage, were to proceed to the Jongri huts and await our return.

*THE CLIMB OF KABUR.*

THE FOLLOWING morning was clear and frosty, and we started off early along the left bank of the Praig Chu. The snow had almost completely melted in the lower levels we were now crossing, and the sight of the first trees, after ten quite barren days, caused some excitement among the coolies. After a gradual descent of about a thousand feet, we came to the bridge of the Praig Chu, where we crossed to the right bank; then over the tributary stream, and up the steep slope leading to the Jongri tableland. About half way we were delayed by soft snow which grew deeper as we went on; and the end of the slope was reached after a good deal of knee-deep plodding.

The arrival of the last loiterers occupied a long half-hour, by which time heavy *cumulus* clouds had banked up above the Southern horizon. The shoulders of the Pandim-Jubonu Range were soon smothered, but its peaks remained visible for some time amongst columns of rising vapour.

Having sent the heavy baggage off to Jongri, I struck out in a North-westerly direction over the trackless mountain-side which sloped towards the *massif* of Kabur. A gentle incline over undulating ground, mostly snow-covered, brought us to a knoll, where I halted to survey the surroundings and to decide on the plan of attack.

The South-Western flank of the mountain seemed to offer a fairly easy route leading to the base of a rock-wall, which buttressed the ultimate heights on their South-Eastern side. Though involving a detour, this appeared to be the best way to strike the weakest spot of the wall, and, barring delays, I reckoned to gain the summit in less than two hours. After taking altitude readings, which gave 13,710 feet, we set off at eleven o'clock.

A couple of short "ups and downs" brought us to the South-Western flank, whence the ascent gradually became steeper. Snow, a foot deep at many places, again retarded our pace, and the next half-hour saw us floundering in the drifts towards the South-Eastern extremity of the buttress. At noon I ordered a ten-minute halt under the lee of a rock which commanded a good view of the Jongri plateau; but unfortunately the sky had again assumed a threatening aspect, with flocks of grey clouds approaching. We had gained 1,280 feet during the first hour. Near the rock I noticed several stems of weather-beaten *Rheum Nobile** (wild rhubarb). The plants had shed their leaves; but the stems were about three feet high and ten inches in girth at the base.

At one o'clock we reached another big rock, the base of which was cut deep in the mountain-side, offering a magnificent shelter; and after a short scramble over stones, partly hidden in snow, we came to the wall along the South-Eastern shoulder. The vapours had by then reached the heights of the mountain, and were being driven swiftly across the upper slopes by a strong southerly wind. Here we were confronted by a rock-climb where hands and knees were of advantage; only at one place, over a "pitch", did I consider it wise to use the rope, owing to the slippery nature of the rock. This was followed by a slope of loose stones; and at three o'clock we reached the summit.

A chilly wind was blowing and there was only a bare apology for a shelter in the shape of a couple of boulders some three feet high. Whether or not these were included in the official triangulated height of 15,814 feet, I was not inclined to check at the moment; but curled up under the scanty protection, I proceeded with my observations. The average readings I obtained gave 15,845 feet—near enough to satisfy me that the corrected averages of my previous observations during the tour had been sufficiently accurate.

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* *I first came across beautiful specimens of these giant rhubarbs some years ago in North Sikkim. On that occasion my insatiable curiosity drove me a thousand feet up the slopes of Lama Anden in order to examine these extraordinary plants closely. Their usual habitation is among rocks at altitudes from 14,000 to 16,000 feet. When the plants are full grown during the monsoon, they are very conspicuous from afar, with their pale-yellow leaves making conical shapes stand out against the dark stone—for all the world like an encampment of Sioux Indians' tepees. More prosaically I may add that the stems are hollow and contain acid water which quenches the thirst. The Sikkimese call the plants* Chuka *and eat them both raw and boiled. I have tried this myself and found it excellent.*

The peaks of Jubonu in clouds; from ridge North-East of Jongri.

Camp near the summit of Kabur, under a shelter provided by Nature.

Of the Northern view there was nothing to be seen beyond a prominent black rock which held its head high above the sea of mist, billowing and breaking in waves round its mass. This was only a few hundred yards away. It was too miserably cold to prolong the stay here for no definite purpose, so I planned to return in the morning, after spending the night in the grotto at the base of the rock-wall.

On our way down, driving snow-flakes caught us full in the face, and the rope had to be used along the steeper slants. At four o'clock we reached the welcome shelter with which Nature had provided us for the night. Two big slabs formed the floor, and about halfway inside the grotto the tent-poles were jammed between deck and roof. Our den faced South-easterly and consequently offered only a partial protection against the Southern blast, which unfortunately strengthened towards sunset. Heavy snow fell for about three hours; but at nine o'clock conditions improved. The minimum temperature registered at night was 28° F., whilst altitude readings gave 15,500 feet.

*THE REPORTED "WILD MAN".*

THE MORNING broke gloriously fine; and the sun streamed into the mouth of the grotto, lighting up the hanging icicles which fringed its upper lip. The heat melted the slender fingers and their fragments fell, tinkling on the floor. I was preparing my instruments and cameras for the start when my attention was attracted by shouts outside the grotto; soon afterwards, the Sirdar and two of the coolies hurried to the tent with the news that a man had been sighted in the valley below. I rushed out—forgetting even to put on one of my snow-boots—and gazed searchingly in the direction in which the Sirdar was pointing.

The intense glare and brightness of the snow prevented me from seeing anything for the first few seconds; but I soon spotted the "object" referred to, about two to three hundred yards away down the valley to the East of our camp. Unquestionably, the figure in outline was exactly like a human being, walking upright and stopping occasionally

to uproot or pull at some dwarf rhododendron bushes. It showed up dark against the snow and, as far as I could make out, wore no clothes. Within the next minute or so it had moved into some thick scrub and was lost to view.

Such a fleeting glimpse, unfortunately, did not allow me to set the telephoto-camera, or even to fix the object carefully with the binoculars; but, a couple of hours later, during the descent, I purposely made a detour so as to pass over the place where the "man" or "beast" had been seen. I examined the foot-prints which were clearly visible on the surface of the snow. They were very similar in shape to those of a man, but only six to seven inches long by four inches wide at the broadest part of the foot. The marks of five distinct toes and of the instep were perfectly clear; but the trace of the heel was indistinct, and the little that could be seen of it appeared to narrow down to a point. I counted fifteen such foot-prints at regular intervals ranging from one-and-a-half to two feet. The prints were undoubtedly of a biped, the order of the spoor having no characteristics whatever of any imaginable quadruped. Dense rhododendron scrub prevented any further investigations as to the direction of the foot-prints, and threatening weather compelled me to resume the march. From enquiries I made a few days later at Yoksun, on my return journey, I gathered that no man had gone in the direction of Jongri since the beginning of the year.

When the news reached Darjeeling the press, as usual, headed their comments with captions of "Wild Man", "Snow Man", and the like — seen near Kangchenjunga by an "Italian" traveller. By the time the British and Continental papers had got the news, the length of the foot-prints had been more than doubled; and some ingenious young gentleman on the *Manchester Guardian* had produced a bird-theory out of his own fertile brain.

When I asked the opinion of the Sirdar and the coolies they naturally trotted out fantastic legends of "Kangchenjunga-demons". Without in the least believing in these delicious fairy-tales myself, notwithstanding the plausible yarns told by the natives, and the references I have come across in many books, I am still at a loss to express any definite opinion on the subject. However, I can only reiterate with a sufficient degree of certainty that the silhouette of the mysterious

Looking South from near Camp VII on Kabur;
banks of clouds racing up.

being was unmistakably identical with the outline of a human figure. I personally rejoice in particularly acute vision and am sufficiently familiar with the appearances of mountain fauna, to be able to distinguish a bear, monkey, snow-leopard, ostrich, kiwi (if you like)—and even a man. I am also somewhat versed in the simple analysis of spoor, and can unhesitatingly state that the prints were those of no wild animal common to the Sikkim-Himalaya. It should be borne in mind that the foot of the Tibetan tribes is inclined to be short, flattened-out and wide across the toes.

I have a theory, which may be worth consideration, if it be not thought too far fetched. Tibet and the contiguous countries are the very citadel of the Buddhist Faith, which in itself is actuated very largely, like the Early Christian Church, by the spirit of asceticism. The country of the Lamas is filled with monasteries; and we must remember that it is only civilisation and increased population that has favoured the cloistral community-system. In Early Church days anchoritism was well recognised and it seems reasonable to suppose that the Buddhist monks may well have turned to this form of mortification, in the same way as the ancient Christian hermits of the Syrian Desert.

I conjecture, then, that this "wild man" may be either a solitary or else a member of an isolated community of pious Buddhist ascetics, who have renounced the world and sought their God in the utter desolation of some high place, as yet undesecrated by the World. However, perhaps I had better leave the conclusions to ethnological and other experts.

*FROM CAMP VII TO THE RATHONG GLACIER.*

BAD LUCK had again prevented me from seeing the much-desired view from the summit of the rock, only a few hundred feet above our camp. As we were leaving the grotto, I was dazzled with the brilliance of the surroundings before the clouds came racing up from the South once more. In this lucid interval we made another dash for the summit; but, before we had started to scale the rock-wall, I decided

not to waste the obviously short time allowed and to make a survey from below.

Looking northwards, over the snow-covered black rocks and irregular minor crests of the foreground, my attention was riveted on Kangchenjunga, soaring high on the far horizon. Both the 28,146 and 27,820 feet peaks were visible, the shoulder of the latter sweeping eastwards — like a sword-blade reflecting the sunlight — to the Zemu Gap. Eastwards again, Simvu raised its craggy head.

Westwards of Kangchenjunga, the Dome and Forked Peak, considerably closer to me, were faintly visible through a sheet of vapour. Beyond them, westwards still, Kabru lifted its two peaks above the rocky spine running southwards from the Dome, which formed the foreground. I had only a few minutes in which to grasp all this, when the banks of clouds had raced up.

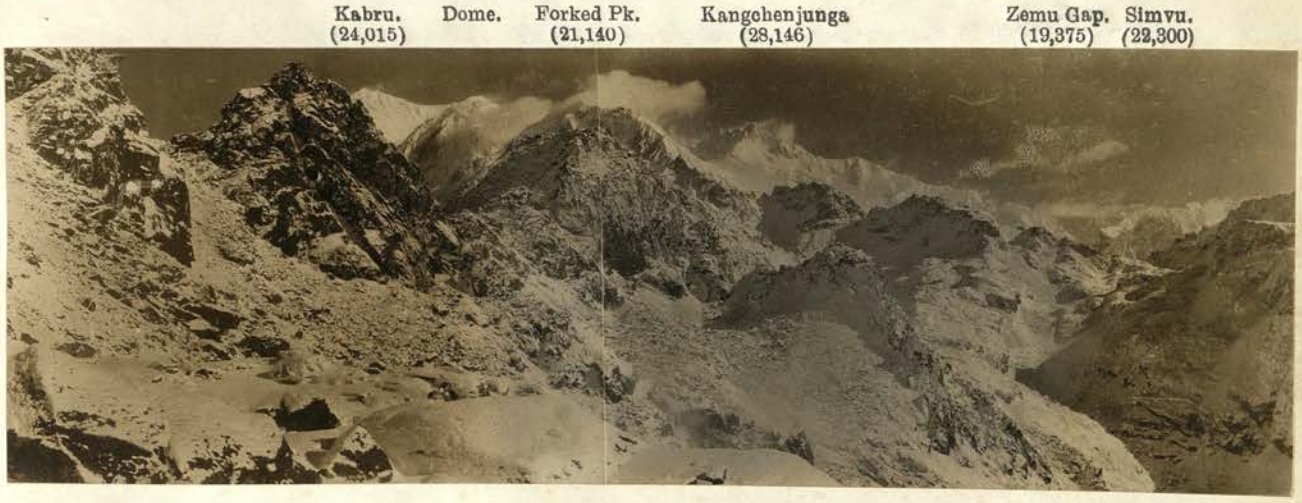
The descent from Camp VII to the Jongri plateau was effected after a good deal of tiresome snow-wading, through drifts which had piled up the previous evening. We were further delayed by the detour made down the valley to the East of our camp, in search of the footprints of the enigmatic "wild man".

It was nearing noon when we reached the Gap South-West of Kabur. The pass was hardly recognisable as we had seen it on our outward journey. Where we had faced that magnificent amphitheatre of mountains there was now a dingy curtain of mist — yet again a repetition of the unfortunate weather conditions by now well known to the reader.

Beyond the Kabur Gap we had a steep descent over slippery rocks, but there was practically no snow on the Northern side of the pass. After a scramble of half-an-hour we came to the Rathong Chu — at this place but a small, icy stream, fed by a net-work of the runnels draining the Rathong-Kabru glaciers and those descending the slopes of the Dome and Forked Peak. We followed the left bank of the stream for two long hours on a gradual ascent which became steeper towards the end. Here the mountain-side rose sharply to the North, with the snout of the Rathong glacier on its flank.

My original plan being to reach the Southern morainic mound of the Rathong glacier, I decided to cross the stream at this place and

Heights to the North of Kabur and the saddle of Kabru in the distance,
(From near Camp VII on Kabur).




Looking North from near Camp VII on Kabur. Altit. (15,500 feet).

to fix a camp on the higher levels, from where I could obtain a better view of the surroundings if the clouds would only clear. So we set off up a steep and rocky trench running North-westwards, and situated between a spur on the left and an ancient, grass-grown moraine on the right. From rough observations, I estimated that the snout of the Rathong glacier could not have been much under 14,000 feet. After an hour's exasperating scramble up this narrow passage, stumbling over unstable stones and splashing through shallow pools of greenish water, we reached what may be called the right lateral moraine of the glacier. Here we camped in a hollow between the rocky hillside and a wall of morainic fragments which separated us from the main glacier.

Though we were sheltered from the wind, the dank, cold mist made our surroundings unutterably dismal. At least there was one consolation in the shape of a small fire, for which I gave thanks to the thoughtfulness of the coolies who had collected a few twigs of rhododendron on the way. It was not till four o'clock that we settled down to prepare our meal; and the rest of an otherwise monotonous evening was spent in listening to all the coolies had to say about the "demons of Kangchenjunga".

To my great disappointment, the morning broke without the least change in the weather which, had actually become worse than ever. After waiting in vain for three long hours, during which I was unable to do more than local reconnoitring, I decided to return forthwith to the Jongri huts. The peaks remained completely covered and on the return we were chilled to the bone by driving snow which fell at intervals.

My arrival at Jongri marked the end of local excursions and the beginning of the homeward journey. The next question was to select the return route to Darjeeling. Besides the one we had followed on our way out, there was another possible direction to be considered. This was by way of the Western border of Sikkim, along the Singalela Range, over the Oma La (15,320), Dui La (14,900) and Ghara La (14,000), joining further South the Sandakphu-Phalut bridle path. This would undoubtedly have suited me better for photographic work; but, under prevailing weather conditions, it seemed hopeless to drag the baggage-train over this series of Passes. For a moment the idea of a small party occurred to me; but I rejected it, for I did not wish to

split up the party during the last week of my tour. I finally decided to follow the same route as on our outward journey as far as Pamionchi, and thence, if the weather improved, to strike on to the Singalela Range by way of the Kalet Chu, Dentam and Chiabanjan.

At Jongri, my tent was pitched as before on the knoll overlooking the huts. There was little snow about, but the afternoon remained dull and I only found warmth by the side of the fires which the coolies had lit in the huts. We had an exceptionally good meal that evening and I indulged myself by opening tins which had been providently kept for "later on". As for "Ronnie", after his vociferous delight on my return, he did not move from my side for fear that his master might again disappear into the *ewigkeit.*

*THE RETURN TO PAMIONCHI.*

THE EARLY mist of a dull morning was the send-off accorded by Jongri to a long procession of twenty-seven men marching in a southerly direction. In this case I did not find it necessary to hurry the coolies for the start, for, to a man, they were like horses headed for stable.

We soon reached the zone of magnificent rhododendrons again, and then the forests of pines and the upper limit of bamboos. The path we were now following seemed to have improved during our absence, accustomed as we were to wanderings in the trackless mountains, for the last fortnight.

An uninterrupted march of three hours brought us to Bakim where a halt was made for lunch. The dark sky had grown darker since our plunge into the dense thickets, and the temperature stood at fully 25° higher than in the early morning. The first drops of rain and the presence of numerous leeches soon drove us on the march again. These beastly parasites looped themselves all over our clothes in their insatiable lust for blood, and were a perfect plague.

The descent continued down the steep mountain-side, choked with the tangle of vegetation, prolifically flourishing in this steamy

Jongri huts by mist.

A last glimpse of Jongri.

atmosphere. Everything round us seemed extraordinarily green, and the impression of walking through a hothouse was intensified as we neared the lower levels. The thunderous waters of the Praig Chu were crossed shortly after, and the last lap, to Nibi, was in heavy rain beneath the streaming boughs. The downpour continued till late that night, soaking our tents and once more encouraging the leeches to their horrid feasts on my shrinking flesh.

I woke to the song of many birds, in the cool freshness of a bright, rain-washed morning; and anticipating that the coolies would indulge in a prolonged halt at Yoksun, I ordered an early start. The tents and the rest of the baggage were packed up in their wet state, as I was counting on the use of the *Kazi's* compound at Yoksun as a drying ground.

At eight o'clock we were passing the camping-place of Tzubuk, and a couple of hours later, after a number of zig-zags, up and down narrow gullies amid a riot of semi-tropical vegetation, we emerged from the forests on to the plateau of Yoksun. The Sirdar had sent a coolie ahead to announce my arrival, and I was met by the *Kazi* who had assembled his whole *entourage* with the usual gifts of fruit and vegetables.

I wished to talk with the landlord; and so told the coolies that they might take two hours off. No sooner had I given the order than they had vanished into thin air—actually, I expect, into the houses of the hospitable villagers and their mugs of steaming *murwa*. By the same token, that same beverage was set before me by the *Kazi*, whilst we were conversing. He took a keen interest in my tour, the story of which was related to him by the Sirdar, with rather exciting gesticulations from both when they got to the episode of the "wild man". Of course I found in the *Kazi* another believer in the "demons of Kangchenjunga" with histories enough to fill volumes.

In the afternoon I visited the Dubdi monastery which is situated on the summit of a forest-clad hill, about a thousand feet above the meadows of Yoksun. On the way up, in a dense thicket, I came on a couple of prayer-wheels driven by the water of a small torrent. These were set with the axis vertical, with the *"Om Mani Padme Hun"* inscribed on the upper and lower edges of the drum, and were painted in the most gorgeous colours. This type of prayer-wheel* is fairly

* *Called* chukhor *by the natives of Sikkim.*

popular in Sikkim, and certainly achieves the ideal of prayer without that effort which the commoner hand-wheel necessitates. The prayers, written on parchment or dried bamboo-leaves, are dropped inside the drum by a slot, like a letter-box, and it is most gratifying to the pious lama, no doubt, to think of the spiritual and temporal necessities of his flock being conveyed to the Powers that Be by the perpetual hand of Nature. One cannot help being fascinated by this unique ritualism, working alone among the silent forest atoning, perhaps, for the natural languor of the faithful.

The Dubdi * *gumpa* is one of the oldest monasteries in Sikkim. It stands on a raised platform under the shade of weeping cypresses which add considerably to the beauty of the surroundings. I was cordially received by the monks and the Teshoo Lama who himself took me round the cloister.

Passing under a double portico of carved and decorated wood, I found myself in a rectangular room with two parallel rows of pillars supporting the roof, likewise of wood, massively draped and decorated. At the far end stood the altar with the image of Gooroo Rimpoche in the centre and his disciples on either side; whilst the walls had garish paintings, chiefly in red, yellow and green — grotesquely representing demons, dragons and lamas. Another smaller chapel, in a more or less dilapidated state, stood at the back of the main temple.

The view from Dubdi *gumpa* is very impressive. To the North, the deep and shaded valley of the Rathong Chu, stretched away to the snowy heights of Kabru, which glistened in the sun. To the North-West, lofty, pine-clad mountains lifted their crags to the sky (and were reported to be the habitat of black bears). To the South, the eye travelled over the long spurs of Tingling and Pamionchi, all dotted with their monasteries which were perched on the high points.

On my return to Yoksun I found some of the most energetic and punctual coolies — the latter rather uncommon — folding the tents and clothes which had already dried in the *Kazi's* compound. The majority of the men, however, were still not in evidence, and it took me some time to satisfy myself that nothing and nobody had been left behind, before I could get away. After sincerely thanking the *Kazi* for

* *Means "the hermit's cell".*

**Kabru Dome and Forked Peak** *(Telephoto from Pamionchi).*

his kindness, I caught up the coolies, whose steps down the steep descent to the Rathong Chu were a shade uncertain, as a result of the mellow Yoksun hospitality.

It was much too late to carry out my project of reaching Pamionchi before nightfall, and I therefore decided to split the journey, leaving the last long slope for the next morning. I found it extremely hot down in the lower valleys and, wishing to avoid these for the night, I pushed on in search of a camp-site on the higher ridges. Having crossed the Rathong Chu and reached the heights of Tingling, we then descended to the Risu Chu, and eventually came to Tadong, where Lepcha huts, raised on wooden platforms, were scattered on the hillside among banana trees.

My tent was pitched at a distance from the farms, where a grassy plot of land offered a far more comfortable bed than any I had found in the last few weeks. Most of the coolies took shelter in the huts; whilst others slept out in the open. My observations gave the height as 5,730 feet — an altitude where the air is neither cold nor uncomfortably hot; and I would have enjoyed a delightful sleep had I not been disturbed by big rats, who made rather a noisy attack on the provisions, and a still noisier retreat, upsetting the cooking utensils as they fled, chased by "Ronnie".

The morning broke exceptionally fine and I hurried off ahead of the baggage train, to avoid the heat down in the valley and allow the whole afternoon for the visit to Pamionchi *gumpa*. A descent of a couple of thousand feet along a winding track, first across cultivated land, then down a steep mountain-side, brought me to the Ringbi Chu, whose waters were swollen by the recent rainfalls. Beyond this torrent there remained, to complete the comparatively short march of the day, an almost unbroken stretch of a 3,500 feet rise to Pamionchi. I only made a short halt at Chongpong, whence the view of the distant snowy range was magnificent; and after a pleasant walk through a forest of giant magnolias and oak trees I reached Pamionchi, and was thus back again among the comforts of a bungalow.

*THE PAMIONCHI MONASTERY.*

EARLY in the afternoon I paid a visit to the *gumpa*, which stands on a hillock at the Eastern extremity of the lofty spur stretching West to East from the Singalela Range. The path led through the forest, where I passed a beautiful *charten*. Then we came on the beginnings of the monastery in the shape of rows of monks' cells leading up to the cloister itself. This is built on a platform of stone at the end of a paved courtyard, on the Western side of which is the chapter house, where the Lamas lodge.

Ascending the steps to the cloister proper one saw a quadrangular building, of the usual Sikkim style, with massive stone walls slightly bulging at the base. It would be a good specimen were it not for its more modern corrugated iron roof, which looks entirely out of keeping with the rest of the structure and spoils its outer appearance. The roof is secured along the four sides of the eaves by chains, embedded in the pavement below, to prevent it from being blown over by the strong winds to which the ridge is exposed. The idea of crowning a five-century old building with this tinny monstrosity does but little credit to the taste of the Sikkim ruler who suggested this innovation. I was told by the Lamas that the previous wooden roof allowed extensive damage to the interior decorations, as it was constantly leaking. On my arrival, the courtyard was somewhat congested with corrugated iron sheets which were being used to repair this architectural atrocity.

The main entrance of the *gumpa* faces the courtyard, immediately above the steps, and is surmounted by a narrow, latticed balcony. The ground-floor windows on either side of the entrance are similarly covered in, and the upper frames of these as well as the beam above the entrance are finely carved and painted in vivid colours. Heavy drapery hangs from below the balcony, in front of a small verandah which serves as a vestibule to the ground-floor. The walls of this are decorated with polychrome paintings of fantastic demons, lamas, dragons, monkeys and the like.

Entering the shadowy depths of the inner shrine, which for centuries has been shrouded in religious obscurity, one cannot fail to be impressed with the solemnity of the Buddhist Faith. One's attention is irresistibly rivetted on the great Image of Buddha on the reredos of the

Image of Buddha
and Altar,
(Pamionchi *gumpa*).

Wall painting,
(Pamionchi *gumpa*).

Section of library showing sacred books, (Pamionchi *gumpa*).

altar. He is sitting cross-legged with the left heel up, left hand holding the lotus on the thigh; whilst the right hand is raised with the *dorjé* in it. His pediment symbolises a huge lotus leaf, with the petals carved on its sides. On either hand of Buddha stand the Mahatmas, and the whole richly ornamented group is under a complicated canopy of wide-mouthed dragons, with their tails twined round the side-columns.

The altar, in front of Buddha, bears the essential articles of ritual: seven small brass holy-water bowls, beakers, incense-burners, peacock feathers, *dorjés*, prayer-wheels etc. Many small tables, benches and shelves are crowded with an assortment of choir-instruments: trumpets over six feet long (*dhungchen*), smaller ones (*radung*), brass cymbals and giant conchs.

From the altar to the vestibule, two lines of pillars run with the choir-stalls parallel and against them. The whole place is bristling with Buddhas, ritualistic objects and weird instruments on walls, shelves, tables and benches and, besides these movables, every square inch of wall is covered with designs and legendary pictures in glaring shades of red, blue, green and yellow. This has a most fascinating effect in the dim, religious light, the colours being toned down to a degree of sombre splendour. Many banners and other heavily embroidered silk hangings are disposed from ceiling and pillars, heightening the sense of obscurity. The atmosphere is close, damp as the grave and permeated with an indefinable odour of incense and the dust of centuries.

The Lamas then kindly took me up to the top floor where there were several rooms of which I will describe only the library, the biggest. The staircase is remarkable for its balustrade of which each upright is the axis to a vertical prayer-wheel. As the monks go up and down stairs, they strike each successively, giving an extra turn to the supplications therein.

The library has shelves like pigeon holes, in each of which is a "book" — that is, documents on daphne or similar paper tied between two boards. Each has a hanging label for rapid reference. The rest of the wall space is covered with brilliant paintings; but of later date than those in the shrine below. In the centre of the room stands a pagoda-shaped model temple, with scores of Buddha images in carved and painted wood. The pedestal terminates at each side in the head of a

giant *dorjé* (the thunderbolt-symbol), from which a wooden rainbow springs in an arc over the whole structure. A number of other images of Saints and venerable Lamas, under separate canopies, occupy various corners and niches in the room.

On leaving the *gumpa*, I returned to the bungalow in time for tea. It had been a glorious day and was followed by a wonderful sunset.

The great panorama seemed to combine the spacious grandeur of the Himalaya with the fire and colour, the living magic of the Greek Highlands. As the sun sank in a cloudless West, the last gleams of gold shot up above the Singalela Range, paled to primrose and merged into that amethystine afterglow so inseparably connected with the hills where the gods dwelt.

I could almost see the mauve veils of light on the slopes of Mount Hymettus, and, as the delicate glow faded into the majestic purple of night, the great mountains unmistakably took on the sombre green shadows of those of Hellas.

There were the dark, craggy heights of Taygetus, the very pine-clad slopes of Kiona and double-headed Parnassus itself—that magic mountain where shaggy Pan was wont to hunt the glimmering nymphs through the trees.

*ALONG THE SINGALELA RANGE TO DARJEELING.*

Early by next morning I awoke to a wild caterwauling of trumpets and conchs. It was festival-day, and the villagers were going up to the *gumpa* to lay their offerings of fruit, flowers and rice at the feet of the Lord Buddha. I determined to have a glimpse of this ceremony before starting on the march, and went as far as the entrance of the monastery, so as not to disturb the worshippers.

To my ear, ignorant of the subtleties of Oriental harmony, the music sounded as if each instrumentalist were bent on making his own pet melody predominate. The drums beat a separate rythm; the trumpeters and conch-blowers each had a completely different tune, and

Model temple, in the library of Pamionchi *gumpa*.

Sangachelling *gumpa*.

Group of
instrumentalist monks.

the whole effect was too lugubrious for words. At the same time the Lamas chanted their doleful psalms, with a chorus of monks taking up the nasal responses. The cacophonous din would end abruptly on a crescendo and crash of cymbals, followed by a breathless silence; and would then start again, sforzando, on another cymbal-crash.

The weather was delightful and the far snows shone in the morning sunshine. Under such favourable conditions I was more hopeful than ever of a successful trip along the Singalela Range. We set off at 8-40, followed for some time by the sound of the musical instruments, gradually fading away in the distance.

Henceforth our journey took us along a magnificent bridle path, which for the first two miles, due East, wound through a forest of luxuriant vegetation—across green glades carpeted with ferns and orchids, and past the dark trunks of giant trees from which hung festoons of bright green moss. The path was almost level as far as Sangachelling where a short halt was made to visit the *gumpa.*

This monastery, though smaller, is very much of the same type as those I have already mentioned; but its giant prayer-wheel, which, after that of Lachen, is among the biggest in Sikkim, merits a detailed description. The mechanism occupies a separate lodge near the entrance of the enclosure. The wheel is balanced on a vertical iron axle, bearing on a beam across the ceiling and on another laid along the stone floor. Just above the bottom bearing is a crank, to which is attached a cord. The wheel itself is a hollow cylinder of wood about ten feet high by five feet diameter, decorated with gorgeous designs and the eternal "Om Mani Padme Hun" inscribed on the periphery at the upper and lower edges. The upper edge is armed with projecting nails which strike on a circle of bells hung from the ceiling as the wheel rotates.

An old monk — who seemed too old for any other job — sat cross-legged on the floor, mechanically jerking at the crank-cord and murmuring perpetual invocations while the wheel turned and the bells tinkled overhead. In theory this performance is never interrupted; but in this case, as my hand approached my pocket, there was a pause, after which the eternal movement recommenced at such a speed that the prayers could not keep up with the bells.

On the hillside, beyond a wall, rows of *chartens* were outlined

against the blue sky, among magnificent clumps of scarlet rhododendrons. Down the slope, for a hundred yards or so, the wall was lined with prayer flags which fluttered gaily in the morning breeze. The view of the distant snows was very fine above the sea of vapours which filled the intervening valleys.

We continued the gentle descent by a path which wound in a steady slope, following the contours of the shady mountain-side. We were moving due South-West and the southward view extended over the deep valley of the Kalet Chu whose foaming waters twisted like a white ribbon down the dark cleft. Beyond the river rose the long spur which stretches West to East from the Singalela to Rinchinpong. The lower slopes of the valley were dotted with villages and farms on plots of cultivated land. Further on, some six miles from Pamionchi, the descent became steeper and ended abruptly in a zig-zagging path which brought us to the level of the Kalet Chu.

This place was called Dentam and had a small bazar about half-a-mile to the East, on the other side of the river. There was a good bungalow on a knoll overlooking the torrent; but the heat was intense, and once more the idea of putting up in the depths of the valley did not appeal to me in the least. However, the way to the Singalela from here being a steep seventeen-mile rise, I decided to push further on and to find a green glade in which to pitch my tent in preference to the roof of a bungalow.

Having crossed the bridge over the Kalet Chu, we continued the march in an easterly direction, for the first mile by a path winding along the right bank of the river. Here occurred an incident which might have had serious consequences. As we were crossing a small side stream, the Sirdar lashed out spasmodically with one foot, and a snake fell away from the heel of his boot, to be instantly despatched by my ice-axe. It was a deadly viper, which had no doubt been sunning itself among the stones. Oddly enough, this was the only snake I had seen; but then, Sikkim is known to harbour very few.

After a somewhat tiresome walk in the heat of a boulder-strewn area, we struck in a South-westerly direction, where the path followed the right bank of a tributary to the Kalet Chu. Then came a steep ascent by zig-zags, and at 5-30 p.m. we reached a beautiful grassy slope

*Chartens* and prayer flags near the Sangachelling *gumpa*.

A stream near Dentam.

What remains of the old bungalow at Chiabanjan.

by the edges of a forest, where the camp was pitched. Here the air was much fresher and the evening was pleasant. Altitude readings gave 6,750 feet; so that, with the extra five miles from Dentam, we had almost regained the height of Pamionchi. I was informed by local herdsmen that the place is called Outari, but no such name appears on the maps.

The morning broke fine, but steamy and hot, with the rays of the sun shining through a light haze. The first mile was along the tributary which we had followed on the previous day. Then the track rose steeply over 3,000 feet through beautiful forests. After a small torrent, spanned by a bridge (altitude 8,200 feet), which we reached at 9-15, the last couple of thousand feet led by a rocky and steep short-cut to the grassy, open space of Chiabanjan (altitude 10,475 feet).

Here the atmosphere was very much cooler and at this height magnificent rhododendrons grew in profusion. I noticed especially the *Argenteum*, some thirty feet high, with its white clusters of delicate, bell-shaped flowers. *Falconeri* spread its giant leaves, deep green on top and red below; but was not in flower. The most conspicuous of all was the *Barbatum*, the magnificent, sanguine blossom of which struck a glorious note of decoration on the mountain-side, which appeared as if drenched in blood where the flowers grew.

I halted at Chiabanjan for lunch near the ruins of a bungalow, deserted for the last twenty years, of which nothing remained but two chimneys and its broken walls, overgrown by vegetation.

From here, the six miles to Phalut were along the spine of the Singalela Range, having Nepal on the right and Sikkim on the left. As we were leaving Chiabanjan, mist came up from the valleys and we were soon surrounded by clouds which totally obscured the view. The first three miles were uphill through beautiful rhododendrons which, however, were reduced to the dwarf species as we neared Mount Singalela.

A steep ascent by zig-zags brought us to the summit, where a heap of stones, surmounted by bamboos from which hung prayer flags, marked the highest point. The place is regarded as of considerable sanctity, and the coolies as usual contributed their token of rice and offered their prayers. Of the so much desired view there was, unfortunately, nothing to be seen owing to the dense mist. In fact it was

so bad at the time that I could scarcely distinguish the path a couple of hundred feet below the summit. Altitude readings gave the height as 12,130 feet.* Beyond Mount Singalela, we had a steep descent by short-cuts; and the last couple of miles were over a more or less level path which brought us to Phalut (alt. 11,816 feet) at four o'clock.

A party of other travellers had just arrived at the bungalow from the direction of Sandakphu, and during the following three days we travelled together on our way to Darjeeling. They very kindly asked me to dine with them that evening. I thoroughly appreciated that dinner party, primarily on account of the most agreeable society; but, also, I must confess, because of the joy of eating food properly cooked and served.

There were no signs of the weather improving and it remained misty and fairly cool. I could not help reiterating the hope that we should have fine weather for the rest of the way — in fact, so insistent was I on the certainty of an improvement, that my unquenchable optimism became a standing joke to my new-found friends. They were themselves inclined to be bitter, I think, for, while I had experienced fine weather for the last three days, they had had persistent mist all that time on the Singalela Ridge. I can only conclude that this spur must attract more rain-clouds than the surrounding country. In any case, I myself seem to have been unlucky in striking mists; a fact which was particularly disappointing here, where I had come expressly for photographing purposes. I was obliged to miss that magnificent view of the Everest Group from the Ridge, which I had seen some years ago, and which I have always considered to be among the finest mountain-panoramas in the Himalaya.

The following morning broke dull and misty with no change whatever, and I set off for Sandakphu at eight o'clock. This march, of just over twelve miles, was by far the easiest of the whole journey, being along a well-kept bridle path. Descending first by a series of zig-zags, the next eight miles were over a fairly level stretch, among the stunted pine-trees of a storm-swept saddle. Rhododendron bunches of the scarlet *Barbatum* broke like fire at every bend of the path, relieving the general drabness of things. The walk ended with a short ascent which brought us to Sandakphu (alt. 11,929 feet), where I pitched my

* *The official triangulated height is 12,108 feet.*

Rhododendron *Barbatum*,
(blood-coloured) 40 to 60 feet high,
flowers in April
Singalela Range.
Alt. 9,000 to 10,000 feet ;
(*About one-ninth natural size*).

Rhododendron *Argenteum*,
(white, slightly yellowish suffused
with pink ; deep green leaves)
30 feet high ; flowers in April
Singalela Range.
Alt. 8,000 to 10,000 feet.
(*About one-ninth natural size*).

tent on a knoll overlooking the bungalow. I fell asleep still dreaming vain dreams of a fine morrow.

Alas, the next day was exactly the same; but with the additional curse of occasional showers. The track led down by steep zig-zags, made still steeper by the interminable short-cuts to which the traveller in Sikkim eventually gets inured. Then, for a mile, we passed over more open ground, followed by a forest of pines and a repetition of zig-zags, which brought us to the small village and farms of Kala-Pokri.

On the way, I met several zobos, grazing by the roadside. These animals are of the domestic type, a curious cross between the Tibetan yak and the Sikkim hill-cow. Their general characteristics are common to these two beasts; but they differ in some details, especially of hair and colour. The zobo lacks the long, black hair of the yak, and its colour varies between pearl-grey and dun-brown.

The yak proper, which is nearly always black, is an animal worth description to those who have not seen it. It is a handsome beast, resembling closely the North American bison. Actually its origin is to be found in the bison of Turkestan, which produced first the wild yak of Tibet and eventually the present domesticated animal. It has long, silky hair, concealing the limbs; rather a small head, with large expressive eyes, full of a docile intelligence; beautiful spreading horns, and a bushy, sweeping tail like an enormous *chowry.** The hefty yak would appear to be a clumsy, slow-moving beast. It is certainly not speedy, but is amazingly hardy and agile. Almost as sure-footed as an antelope, it will scale the steepest slopes at impossible angles to reach its grazing-ground. To the highlanders of Tibet and Sikkim the yak is as the cow to the plainsman of India — the inseparable guide, philosopher and friend. The hillman, however, gets more out of his animal, for his fabrics are woven from its hair and its flesh provides him with food. Its milk is very creamy and nourishing. In the summer months the yak inhabits the high pastures from 13,000 to 17,000 feet; but the winter snows drive it to the levels of 7,000 to 9,000 feet, below which height it cannot live.

Leaving Kala-Pokri, the descent continued by well-defined zig-zags, until the lowest limit of the day's march was reached at 8,300 feet. From here the bridle path wound in and out; and after several

* *Fly whisk much used in India.*

ascents and shorter descents, passing through bamboo glades, I reached a small bridge spanning the cascade of a torrent where I halted for lunch, in drenching rain. Beyond this watercourse and for the rest of the afternoon the track led uphill to Tonglu. Many lovely rhododendrons again attracted my attention, and I rather concentrated on their accessible beauty, in default of the distant view which was persistently denied me.

We reached Tonglu (alt. 10,074 feet), at four o'clock, where the tent was pitched on a hillock to the South of the bungalow. Shortly afterwards, a heavy shower fell; but at sunset there were signs of the weather improving, and some of the nearer mountains of Nepal, to the North-West, became visible for a short time.

Whilst opening a small case, in which I had packed specimens of rocks collected from the Talung and Tongshyong moraines, I descovered an empty biscuit tin, the existence of which I had entirely forgotten. In this, to my astonishment, I found two bunches of the *Saxifraga* which I had gathered on the rocks above the Guicha La. The plants had survived a fortnight under the lid of a tin and were in a flourishing condition. They lived for another couple of months, in the kind care of friend in Darjeeling, during which period they almost doubled in size and produced buds; but at the outbreak of the monsoon they withered. Evidently they could stand the lower altitude, but could not survive the humidity. The photograph facing page 30 was taken in Mr. Sain's Studio in Darjeeling, and shows these plants in the condition in which they arrived.

Yet another showery morning was the beginning of the last day of my journey. The drizzle and mist of an early forenoon saw us down the 3,750 feet leading to Manibanjan; whence, by short-cuts, we reached Simana *basti*, which is linked to Darjeeling by a broad cart-road, through Sukia-Pokri and Ghum.

As I had a very limited number of days at my disposal, and wished to develop all my negatives in Darjeeling, I sent a coolie ahead to make arrangements for a car which I found awaiting me at Simana *basti*. Though only a rickety Ford, it seemed a luxurious method of covering the last lap. It was drizzling when I reached Darjeeling and it continued so, with occasional breaks, during the next few days which I spent in developing my negatives.

And so, after many vicissitudes, my journey was over. It is unfortunate that the end of the way descended from the sublime visions of the heights to the ridiculous mists of the Singalela. It was an anticlimax, for the dulness of which I must freely apologise to the patient reader. For the more tedious parts of my account the only excuse I can find is that of the persistent blanketing of cloud which, indeed, had prevented me from attaining my greatest ambitions. Perhaps I flew too high, Icarus-like; but again I excuse myself by the undoubted fact that the phenomena of cloud conditions at high altitudes are sufficient to cause the most intrepid and skilled mountaineer to look before he leaps. I have no such pretensions and, moreover, had the factor of time to consider, which often necessitated a choice between going very slowly or not at all. In these cases I always had to abandon the particular project.

Despite all difficulties, however, I consider myself extraordinarily lucky to have attained the modest heights recorded by a pen for the clumsiness of which I must repeatedly apologise to the reader. If what has (or has not) been read seems rather boresome in parts I crave indulgence and, further, belief that the actual travel itself transcends all possible description. I have only attempted to convey a fraction of the intense pleasure I experienced in my Sikkim month. Perhaps, in touching on expert scientific matters in dilettante fashion, I shall have aroused criticism and have earned a name as a snapper-up of unconsidered trifles. Still, it is all so interesting that I was tempted beyond my strength. I confess it. I have dabbled; but the mountain-fever is in my blood and those who have been there will understand how one is bewitched by the magic of a strange and wonderful world.

The kindly reader will realise that desire has outrun performance; and that my ability has simply proved hopelessly insufficient to describe the soaring heights, the abysmal depths, the illimitable horizons, the dazzling snows, the enchanted forests and rivers and all the marvels of colour and shape in those far solitudes. I can only asseverate that given the slightest opportunity, no one with his five senses capable of absorbing the most perfect beauty imaginable should hesitate. Go and see.

# TABLE

OF

## STAGES & CAMPS & THEIR RELATIVE HEIGHTS WITH APPROXIMATE DISTANCE BY ROAD & TIME OF ACTUAL MARCH

| From | To | Height | Miles | Hrs. |
|---|---|---|---|---|
| Darjeeling | Chakung (*bungalow*) | 5100 | 20 | 7½ |
| Chakung | Rinchinpong ,, | 6000 | 11 | 4 |
| Rinchinpong | Pamionchi ,, | 6920 | 10 | 4½ |
| Pamionchi | Yoksun village (*camped*) | 5675 | 13 | 6½ |
| Yoksun | Tzubuk *camp* | 6700 | 3¾ | 2 |
| Tzubuk | Jongri huts (*camped*) | 13430 | 16½ | 10½ |
| Jongri | Aluktang (*Base camp*) | 13150 | 6½ | 3½ |
| Base Camp | Camp I | 15450 | 6 | 3¾ |
| Camp I | ,, II | 16525 | 3 | 2¼ |
| ,, II | ,, III | 18350 | 2½ | 4 |
| Ascent of Peak "20150" (*on Eastern ridge of Kabru*) | thence to ,, IV | 15630 | *up* 1½ / *down* 3¾ | 3 / 4½ |
| Camp IV | ,, V | 15750 | 4¾ | 3½ |
| ,, V | ,, VI | 17940 | 5 | 7 |
| Ascent of Gap "19375" (*on Eastern ridge of Kangchenjunga*) | thence to ,, V | 15750 | *up* 1½ / *down* 6½ | 3 / 8½ |
| Camp V | ,, IV | 15630 | 4¾ | 4¼ |
| ,, IV | Aluktang (*Base camp*) | 13150 | 7½ | 4 |
| Base Camp | Camp VII | 15500 | 7¾ | 5½ |
| Camp VII | ,, VIII | 14320 | 7½ | 4½ |
| ,, VIII | Jongri huts (*camped*) | 13430 | 9 | 5½ |
| Jongri | Nibi *camp* | 7300 | 14¾ | 6½ |
| Nibi | Tadong hamlet (*camped*) | 5730 | 11¾ | 6 |
| Tadong | Pamionchi (*bungalow*) | 6920 | 6½ | 2½ |
| Pamionchi | Outari *camp* | 6750 | 15 | 6 |
| Outari | Phalut (*camped*) | 11816 | 12½ | 7½ |
| Phalut | Sandakphu ,, | 11929 | 12½ | 5 |
| Sandakphu | Tonglu ,, | 10074 | 14 | 6 |
| Tonglu | Darjeeling | 7157 | 22½ | 7 |
| | TOTAL ... | | 261 | 148 |

## LOCALITY OF CAMPS

| | |
|---|---|
| I | Chemtang |
| II | Rocky spur North-West of Guicha La. |
| III | Eastern spur of Kabru (*North of Guicha Glacier*) |
| IV | Near moraine of Guicha Glacier (*below Guicha La*) |
| V | Talung Glacier (*left, lateral moraine*). |
| VI | Tongshyong Glacier (*Northern extremity, below Zemu Gap*). |
| VII | Near summit of Kabur |
| VIII | Rathong Glacier (*right, lateral moraine*) |

# CHART OF METEOROLOGICAL AND ALTITUDE OBSERVATIONS.

**ALTITUDE** ABOVE S. L. IN 1000s OF METRES. FEET.

**TEMPERATURE** F. C.

| DATE | WIND | SKY | VISIBILITY | GENERAL |
|---|---|---|---|---|
| 3rd | Calm<br>Light S.W. | Overcast<br>Cloudy | Bad<br>Poor | Drizzle<br>Rain |
| 4th | Calm | Partly covered<br>Clear | Bad<br>Poor<br>Good | Good<br>Fine sunset |
| 5th | Calm | Clear<br>Partly cov'd.<br>Clear | Good | Fine |
| 6th | Light S.<br>Strong S. | Cumulus<br>Nimbus | Good<br>Bad | Good<br>Heavy rain<br>Showers |
| 7th | Calm | Clear.<br>Partly covered | Good | Fine |
| 8th | Light N.<br>Strong N. | Clear<br>Overcast<br>Cloudy | Good<br>Bad | Good<br>Misty<br>Cold |
| 9th | Calm<br>Light S. | Clear<br>Cumulus<br>Clear | Very good<br>Bad<br>Good | Excellent<br>Misty<br>Good |
| 10th | Calm<br>Strong S. | Clear<br>Overcast | Very good<br>Bad | Fine sunrise<br>Mist. Cold<br>Heavy snow |
| 11th | Calm<br>Strong S.<br>Squalls | Clear<br>Overcast | Very good<br>Bad | Excellent<br>Very cold,<br>Misty |
| 12th | Light S.<br>Strong S.<br>S. W. | Clear<br>Hazy clouds<br>Overcast | Good<br>Bad | Fine sunrise<br>Misty<br>Bitter cold |
| 13th | Calm<br>Light S. | Obscured<br>by clouds | Very bad | Very cold<br>Misty |
| 14th | Calm | Clear<br>Overcast | Good<br>Bad | Good<br>Misty |
| 15th | Calm<br>S. E.<br>S. | Covered<br>Comptly<br>covered | Bad<br>Very bad | Very cold<br>Misty |
| 16th | Calm | | | Dull<br>Snow |
| 17th | Calm<br>S. E. | Obscured | Bad | Persistent<br>Mist<br>Dull |
| 18th | Calm<br>Light S. | Clear<br>Overcast.<br>Clear | Good for 1 h.<br>Poor<br>Good | Good<br>Dull<br>Fine |
| 19th | Light S.<br>Strong S. | Clear<br>Overcast | Good<br>Bad<br>Very bad | Fine sunrise<br>Dull<br>Heavy snow |
| 20th | Calm<br>S.<br>S. W. | Stratus<br>Overcast<br>Obscured | Good for 1 h.<br>Bad | Fair<br>Dull<br>Misty. Cold |
| 21st | Calm<br>Strong S. | Overcast | Bad<br>Poor | Peaks cov'ed<br>Snow at<br>intervals f. |
| 22nd | Light S.<br>Squalls | Overcast | Poor | Dull<br>Heavy Rain |
| 23rd | S. W.<br>N. W. | Cirrus<br>Partly cov'ed | Good<br>Poor | Good<br>Steamy |
| 24th | Calm | Clear<br>Covered<br>Clear | Good | Fine<br>Good<br>Fine |
| 25th | Calm | Cumulus<br>Overcast | Good<br>Poor | Fair<br>Very bad.<br>Steamy |
| 26th | S. W.<br>Light S.<br>S. W. | Partly cov'ed<br>Obscured<br>by mist | Good<br>Mist<br>Bad | Good<br>Misty<br>Cold |
| 27th | Calm | Covered | Bad | Mist.<br>Showers |
| 28th | S. W.<br>W. | Covered<br>Clear | Bad<br>Poor | Mist<br>Rain at<br>intervals |
| 29th | Calm<br>S. W. | Partly cov'd<br>Overcast | Poor | Mist.<br>Rain.<br>Showers. |

WEATHER NOTES.

**REFERENCE**

Altitude

Temp. (shade)

Maximum

Minimum

Snow-line

Weather observations read downwards

6 A. M.
NOON
6 P. M.

APRIL, 1925

# LIST OF SOME OF THE SCIENTIFIC INSTRUMENTS USED DURING THE TOUR

SURVEY :—

3 inch Transit Theodolite (*complete outfit with Base Line measuring apparatus and 100 feet "Invar" tape*).

Plane Table, fitted with Alidade etc.

Mercurial Barometer.

3 Aneroid Barometers :—

range 0 to 23,000 feet.
12,000 to 25,000 ,,
15,000 to 30,000 ,,

Prismatic Compass, radium (*Large A. S. pattern*).

Max. and Min. Thermometers (*2 sets in cases.*).

Clinometer etc.

PHOTOGRAPHIC :—

Camera, ¼ pl. Sinclairs' "Una" (*triple extension, with Ross Combinable lens*).

Camera, ¼ pl. Sanderson "Tropical"

Tele-photography, complete outfit with :—
Ross Telephoto Tube setting, Atkin-Swan Tilting Table, special Tripods, Lens Hoods, Filters and other instruments required for Telephotography.

Plates, Panchromatic and others, of various makes, Cut films etc. for 300 exposures in all.

*NOTE*—Most of the above instruments were supplied by Messrs. Cary, Porter & Co., and J. A. Sinclair & Co., Ltd., London, and tested by the National Physical Laboratory.

## SOME ARTICLES OF USE AND ORNAMENT IN SIKKIM.

THESE FORM PART OF THE COLLECTION MADE ON MY TRAVELS, AND INCLUDE OBJECTS OF DAILY USE, RITUALISTIC ARTICLES FROM THE *GUMPAS*, AND ORNAMENTAL DETAILS. THEY ARE MOSTLY OF TIBETAN ORIGIN.

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(1 & 2) **Yak Horns,** used for carrying water.

(3) ***Beulo*, the Sikkimese sepoy's shako,** made of plaited cane, with peacock-feather aigrette.

(4) **Butter-dish,** copper with brass bands.

(5) **Woman's Jewel Box,** copper, with brass ornamentation and turquoise studs on the lid.

(6) **Tibetan Holy-Water Font,** copper, richly ornamented with brass figures representing Buddhas, animals and demons' heads.

(7) *Murwa* **Jug,** bamboo stem with brass bands; a reed passes through a hole in the lid.

(8) **Man's Tibetan Boots,** made of green, blue and scarlet felt, with soles of yak hide.

(9) **Tibetan Teapot,** copper, beautifully decorated with brass ornaments representing dragons. This is also used in *gumpas* for pouring holy water into the small vases which are placed in front of the idols.

(10) **Woman's Earrings,** turquoise, mounted on silver.

(11) *Dorjé,* brass instrument, about four inches long, said to represent a double-headed thunderbolt. It is held by the Lamas in the right hand during religious ceremonies.

(12) *Dhilboo,* bell used by Lamas in conjunction with the *dorjé* and held in the left hand. The handle is a replica of half a *dorjé.*

(13) **Tibetan High Official's Belt,** yak leather, with engraved silver couplings.

(14) **Buddha,** relief carving of wood, painted in brilliant colours.

(15) **Tibetan Pipe,** with jade mouthpiece.

(16) **"Smoker's Companion",** linked up with a leather thong, consisting of:–

(*a*) **Tinder Pouch,** ornamented with silver medallions. The bottom of the pouch is a steel segment, on which is struck the flint contained in the leather pocket.

(*b*) **Tobacco Pouch,** of yak leather, with pipe scraper attached.

(*c*) **Sandalwood Bowl,** in which the tobacco is prepared for the pipe.

(17) **Jade Vases,** perhaps imported from China.

(18) **Tibetan Amulet,** worn as a pendant from a necklace of coral, turquoise and other stones.

(19) **Brass Casket,** with idol of Buddha showing through the small window.

(20) **Prayer-Wheel,** with inscription "*Om Mani Padme Hum*" on cylinder.

(21) **Tibetan Charm-Box,** of engraved brass, which contains written prayers.

(22) **Woman's Tibetan Boots,** gorgeously coloured, with soles made of thick layers of felt.

(23) **Amber beads,** probably imported from Siberia.

(24) **Brass Plate.**

(25) **Brass Medallion,** representing the "Wheel of Life".

*Kukri* **Knives.** In the small pockets of the sheath are knives, scissors, tweezers, steel tooth-picks and many other instruments.

(26) and (27) have yak-horn handles, (28) ivory, and (29) wood.

(30) **Turquoise-studded, Silver chatelaine,** worn on the bosom. From the chain depend articles of manicure, pedicure and the toilet generally; but judging from appearances these are seldom put to their proper uses. The tweezers are used for pulling out hair from the face, or for extracting thorns. There are also tooth-picks and ear-scrapers.

(31) **Dagger,** with ivory handle.

(32) **Dagger,** in silver scabbard.

(33) **Sword,** in copper scabbard.

(34) **Battle-axe,** with poniard sheathed in the handle, and drawn by unscrewing.

(35) **Belt,** of High Officials and Lamas. The eight ornaments placed between the brass studs are said to symbolise the Buddhist Law.

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Block figures indicate main description
*Italic figures indicate mere reference* } *e.g.* KABRU; 17, *26.*

*Chu* = River; *La* = Pass; *Kang* = Snow.


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